ELL BOOKS

HOW TO KEEP YOUR HEART YOUNG AND HEALTHY

Dr K K Datey
Dr P E Bharucha

BELL
BOOKS

How to Keep Your Heart Young and Healthy

Dr K K Datey
Dr P E Bharucha

VIKAS PUBLISHING HOUSE PVT LTD
DELHI BOMBAY BANGALORE KANPUR

Bell Books
Paperback Division of
Vikas Publishing House Pvt Ltd

First Bell Books Edition 1975
Second Bell Books Edition 1975

First Published by Times of India Press, Bombay

Published by Vikas Publishing House Pvt Ltd
5 Daryaganj, Ansari Road, Delhi 110006

Preface

Man is insatiably curious about his enviroment, the earth, the stars, and the moon. He is curious about himself too, more so when he is not well. This curiosity of his is hard to satisfy, for most of medicine is couched in such highly technical jargon that it sometimes baffles even the medical men.

This book has been written especially with the lay people in mind. It may help them in understanding some aspects of medicine. It is confined to the heart, for the heart is perhaps the most vital of all organs of the body, the one organ without which it is impossible to remain alive.

Beginning with an account of the heart and how it works, it sets out the factors which affect the heart, the symptoms and signs of disease, so that everyone may become familiar with such symptoms at the time of any illness. The line of treatment has also been suggested so that the patient may understand and appreciate the regime prescribed by the doctor.

Emphasis has been laid on the prevention of disease throughout, and this is really the keynote of treatment today.

The ideal goal of any health programme is of course to prevent disease altogether. But this goal may be unattainable in certain cases and the best that can be done is to limit the incidence of the disease. This, more than anything else, has prompted the inclusion of the somewhat

lengthy tables at the end of the book. These tables give the important constituents and calroci values of articles of food commonly consumed. These will be specially useful in planning diets in cases of obesity, diabetes, high blood-pressure, heart failure, etc.

An effort has been made to keep the language as simple and non-technical as possible. If this book has answered some questions, settled some doubts, it will have served its purpose. And if it brings hope to those afflicted with heart disease and reassurance to those not so afflicted it will then have realised the main objective of the authors.

This preface would be incomplete if it did not acknowledge the author's sincere thanks to Dr C.P. Dalvi for his valuable advice, to Miss Shobha D. Thakoor for her help with the diet charts, to Mr R. N. Shukla of the *Times of India* for all his cooperation and courtesy (even in times of stress), and to numerous patients and friends whose suggestions have made this book possible. It is our earnest hope that more suggestions from the readers will make the next edition even better.

K.K. DATEY
P. E. BHARUCHA

Contents

1

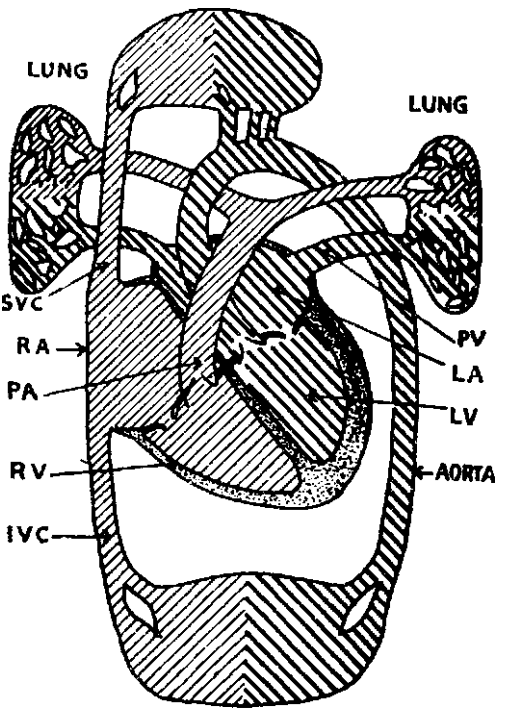
The Heart and Circulation of Blood

THE heart is globular, quite unlike the shape chalked on walls or carved on tree-trunks at picnic spots. It is located in the centre of he chest, slightly to the left. The lower end is pointed and directed towards the left, but the upper part is more or less in the mid-line.

What is the heart like?

About the size of a fist, it weighs roughly 300 gm. in an adult male and about 50 gm. less in a woman. The muscle of the heart is something special. The incessant beating of the heart would exhaust any ordinary muscle, but the heart muscle is virtually inexhaustible. It is tough and resilient, it recuperates rapidly and is apparently none the worse for wear and tear. The heart muscle is known as the myocardium; the membrane covering the heart on the outside is the pericardium: and lining it on the inside is the endocardium.

There are four chambers in the heart, two above and two below. The two chambers at the top are thin-walled, for their main function is to receive blood and consequently no great muscular development is required in their walls. They are known as the atria, one is on the right and the other on the left. Below them lie the other two chambers, the ventricles, one right and the other left. They have thick muscular walls, for they have to pump out blood into blood-vessels (pipes) with every beat of the heart. In between the atria and ventricles are guards or valves, to prevent any blood from leaking backwards. That on the right side of the heart is known as the tricuspid valve, while the one on the left is



The Heart and the Circulation of Blood :

From the head and neck and body, venous blood is taken via the superior vena cava (SVC) and inferior vena cava (IVC) to the right atrium (RA). It then enters the right ventricle (RV) and goes to the lungs via the pulmonary arteries (PA) to pick up oxygen. It goes back to the heart, via the pulmonary veins (PV) and enters the left atrium (LA). From here it flows into the left ventricle (LV) and is pumped out into the aorta to reach the head and neck and body.

called the mitral valve. When the valves are defective, the efficiency of the heart is impaired.

What does the heart do?

Blood is carried back to the heart from all over the body by the veins. The venous blood is dark in colour and low in oxygen, for various organs in the body have drawn from it the oxygen which they need for their vital processes. From the veins, blood enters the right auricle and passes into the right ventricle.

From the right ventricle, blood is pumped into the pulmonary artery which takes it to the lungs to be aerated (oxygenated). The blood is now bright red in colour; it has taken up oxygen from the lungs and has lost the blue tint of venous blood. From the lungs via the pulmonary veins, this freshly oxygenated blood enters the left auricle. It then flows into the left ventricle and is pumped into the aorta, the largest artery in the body, which divides and subdivides so that oxygenated blood may reach the farthest corner of the body. Between the different chambers are the valves mentioned earlier—which ensure the flow of blood in the correct direction, through the heart and into the blood vessels. The heart then maintains the circulation, which carries life-giving oxygen to every organ in the body.

The heart muscle itself is supplied oxygen, adequate for its needs at rest and during exercise, by the coronary arteries, which are given off by the aorta before any of the other branches. In the normal heart, they weave a fine and regular tracery through the muscle a pattern which is damaged and distorted in disease.

A bank manager handles all the money but has to depend for his subsistence on his salary. The heart is just the same; it keeps the blood circulating but has to depend for its own needs on the coronary arteries.

2

Congenital Heart Disease

A CONGENITAL disease is one that you are born with; in other words, something that is present from birth. It may affect almost any part of the body, and, when it affects the heart, it may produce the most crippling of deformities.

SOME CAUSES

Some congenital heart diseases are known to affect certain families. Why this should be so is not clear. These defects in the heart are also well known in babies born to mothers who have had German measles during pregnancy. German measles is the best known, but probably there are other infections as well.

Apart from infections, there are many drugs which are believed to cause defects in the heart of the child in the womb. The latest one is thalidomide, which has occupied so much of the lay press recently, because it has been found to produce deformities of the limbs as well. Cardiac malformations are also found more frequently in people living at high altitudes. The towns in the Peruvian Andes, at heights above 9,000 or 10,000 ft. (3,000 to 3,500 metres) are known to have a high incidence of babies born with defects in the heart. Perhaps it is the general lack of oxygen at these high altitudes which plays some part in producing them. X-rays, radium and nuclear fallouts have also been incriminated. But, whatever the cause, one thing is certain : a congenital heart disease strikes the infant in the womb during the vital period when its heart is developing—that is, during the third to the eighth week of pregnancy.

Only the obvious harmful substances are known to us. There are, apparently, many others of which little is known and they may be quite common, too—for example, vitamin deficiencies.

IN CHILDREN

Some babies with congenital heart disease have been rather aptly termed "blue", but many are not blue at all. When they are blue, or when they are breathless—as blue babies are—the diagnosis is usually made earlier. When they are not blue, they may not be diagnosed till they are much older—at school, or after an examination for some other complaint not connected with the heart at all.

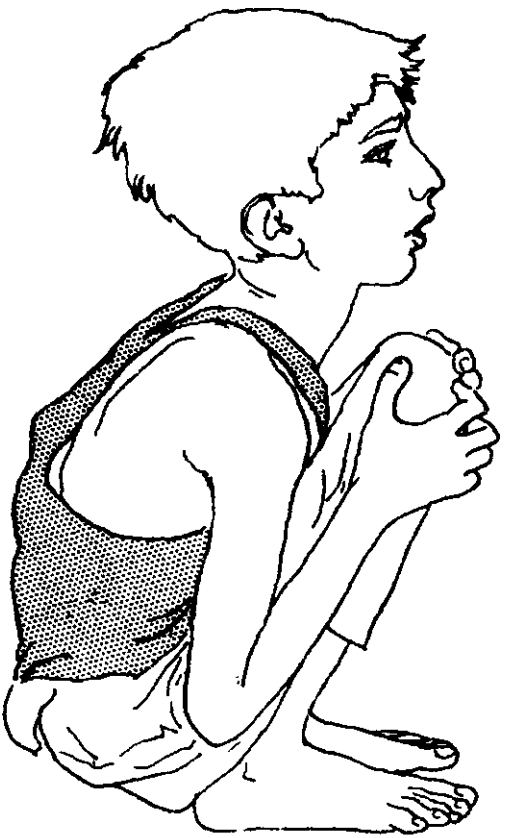
The blue colour is due to insufficient oxygen in the blood in the arteries. This is because the venous blood is shunted from the right side of the heart to the left and finally to the arteries, without passing through the lungs, where normally the blood is oxygenated. A lack of oxygen in the blood also means that less is available for the tissues, and the general lack of oxygen is evident from the breathlessness afflicting the child. Shortness of breath is noticed only after exertion. In the infant, for instance, there may be breathlessness only after some exertion—say, after sucking milk, or after the strain of coughing, or passing a hard stool, or a fit of crying. In the more active toddler and the school-child, the breathlessness is readily noticeable. Some blue children become so breathless that they have to stop running or playing and sit down. They sit quite characteristically: they squat on their haunches, for in this position they are less breathless. This is particularly seen in the condition called "tetralogy of Fallot"

The general shortage of oxygen tends to interfere with their growth, and these children are often small and stunted and more susceptible to infections.

PREVENTION AND MANAGEMENT

Many mothers these days, if they have an attack of, say, German measles in the first three months of their pregnancy,

demand termination of the pregnancy rather than face the prospect of a child with a deformed heart. For those who wish to carry on with the pregnancy there are 10% to 40% chances of a new-born with a deformity of the heart. Today however most cases of heart deformities can be corrected by surgery.



Congenital Heart Disease :
This is how a "blue baby" squats when he gets out of breath.

The simpler defects, fortunately, are by far the most common. Patients with these simple defects usually are not blue and include cases with abnormal communication between different chambers of the heart or blood vessels. The opening may be between the atria or the ventricles, or there may be communication between the aorta and the pulmonary artery. This permits red arterial blood to be shunted from the left to the right side of the heart.

However, due to changes in the lungs, the blood may be shunted in the reverse direction, particularly after exertion or infection. In other complicated cases, the blood-vessels (the aorta and/or the pulmonary artery) may have an abnormal origin and, in these cases, the blood from the right side of the heart is shunted straight to the aorta, without passing through the lungs. In other cases, there may be only a single ventricle or a single atrium. Many other complicated defects may be present. These cases are usually blue. In all these cases, corrective surgery is essential and, whenever possible, should be undertaken early to prevent further irreversible damage to the heart.

THE HEART-LUNG MACHINE

While details of the surgical techniques will be out of place here, a few words about the ancillary aids which the surgeon has obtained from some recent inventions may be of interest.

Much is heard these days about the heart-lung machine. Much is also heard about cooling the body during operation, or hypothermia. Why exactly these procedures became necessary and how they have helped make fascinating reading.

The heart-lung machine became necessary to carry on the circulation while the heart is opened by the surgeon for correction of the holes or other defects in it. Without it, the circulation of blood in the body would stop, and this would lead inevitably to death within a few minutes. The heart-lung machine looks complicated and is awe-inspiring, although it is very simple in principle. It takes blood from the veins, exposes it to oxygen and returns the oxygenated blood to the arteries.

However there are numerous problems involved in the procedure which require the use of a number of gadgets. One is a pump, another prevents the blood from frothing, and still another stops air bubbles from entering the arteries, where they may prove fatal.

HYPOTHERMIA

The idea of cooling the body during the operation is really taken from nature herself. During winter, some animals hibernate, which means that they crawl into a hole and go to sleep there. Then they do not need to search for food or to keep themselves warm. They have very little oxygen in the hole in which they are hiding. This shortage of oxygen may harm a normal, warm, active animal, but when the animal hibernates, his temperature falls and the lack of oxygen does not do any harm to tissues such as the heart and the brain. This same principle is applied to man. During the operation, his temperature is lowered, so that the tissues can survive the relative lack of oxygenation.

SURGERY

The era of spare-part surgery is at hand. The overwhelming difficulties are gradually being overcome and organs are being replaced by synthetic materials and by other organs from human donors. This progress is very evident in heart and blood-vessel surgery. The whole human heart has not yet been successfully replaced. But blood-vessels, some of them quite large, are being repaired with replacements of dacron, teflon and other synthetic materials.

3

Rheumatic Heart Disease

TILL the beginning of this century, rheumatic heart disease was supposed to be uncommon in the tropics. It was thought to be predominantly a disease of the colder countries. This is, unfortunately, not true. And, though what is popularly termed "rheumatism" is universally known to cripple the joints, it is not so widely known that rheumatic fever truly cripples the heart far more than the joints.

"Rheumatic fever licks the joints but bites the heart!" And, once it has bitten, there is no going back.

The attack of rheumatic fever begins about two to three weeks after a throat infection due to a hemolytic streptococcus, usually in a child between the ages of five and fifteen. This disease attacks both sexes, but it is more common in females in the ratio of about 4 to 3. The streptococcus does not directly invade the heart and joints, but rheumatic fever is a reaction to the products of these organisms absorbed into the body.

About 60% of rheumatic fever patients will develop a murmur which indicates involvement of the heart. However, in some of these cases, the murmur will disappear after the acute attack is over. It is probable that the heart is involved—however slightly or transiently-in a very large number cases. In a certain percentage of these cases, there is complete recovery or minimal residual damage to the heart with no manifestations.

Rheumatic fever causes an inflammation of the entire heart—the inside lining, the muscle and the outer covering

membrane. The inflammation results in damage to all the tissues of the heart, particularly the inside lining, causing eventual scarring and deformity. This affects especially the valves and narrows down their opening, thus cutting down the amount of blood which can flow through the valves, particularly the mitral and aortic valves. The mitral valve may become so constricted that it will barely admit the tip of the little finger (normally it can admit three fingers). Then the blood flow is held back and the pressure effects of this are felt in the other organs, particularly the lungs and the liver.

The increased strain that these narrowed and tight valves throw on the heart explains the frequency with which these patients develop heart failure. They may improve from some of these attacks of failure, after rest and drugs and so on, but unfortunately there comes a time when the overload of work becomes too much for the heart.

These attacks of failure are often brought on by some added strain, such as an infection, either of the rheumatic process itself or of the lungs.

Rheumatic fever can and, in fact, should be prevented. This will be possible only when the attack of rheumatic fever is obvious. When it is not so obvious, it may be somewhat more difficult. The initial sore throat may be missed altogether in a child busy with school activities. Besides, the rheumatic fever itself may masquerade as influenza, as a chill, as malaria, or as any one of the dozen-odd common fevers.

Repeated sore throats in any child obviously need attention. The tonsils should be carefully investigated and, if diseased, are better removed. Rheumatic fever often runs in families, and, once a person in the family has been known to have it, it is best to be doubly cautious.

PROPHYLACTIC TREATMENT

Even after removal of the tonsils, sore throats may occur. For these, it has been suggested that taking tablets of penicillin or sulfonamides every day, continuously throughout the wet, cold months or the year round, may stave off sore throats.

This has indeed worked, but the tablets must be taken regularly, even when there is no sore throat. This long-term prophylactic treatment, though effective, is expensive.

During an acute attack, it is absolutely essential to go to bed and abide by the doctor's orders. Many hearts have been ruined for want of this simple precaution. The doctor will prescribe the drugs that are to be taken. Briefly, the most important of these is aspirin or sodium salicylate. In recent years, corticosteroids have also been used for rheumatic fever.

For those whose heart valves have already been damaged due to the devastating effects of rheumatic fever and who are struggling through life, a new hope has been offered. Operations have been devised to widen these narrowed valves, by finger fracture of the commissure or by cutting the line of fusion of the valve cusps with a knife. Now, with more recent refinements, it is possible to replace the diseased and damaged valves of the patient with artificial ones. This is another feature of spare-part surgery which has been successfully practised. True, the artificial valves cannot be as good as the real ones; but they have helped many though the results of their long-term use are still awaited.

There is always an optimum time for these operations. If delayed too long, certain changes take place in the blood-vessels of the lungs, and these may not regress even after valve surgery, and in such cases the patients do not usually improve much even after surgery. Pregnancy may also make excessive demands on an already damaged heart. Moreover, infection of the damaged valves in the heart itself may occur—a condition known as bacterial endocarditis.

4

High Blood-Pressure And Heart Disease

BY BLOOD-PRESSURE is meant the pressure which the blood exerts against the wall of the artery through which it flows. The technical term for a high blod-pressure is hypertension or hyperpiesia. Hyperpiesia comes from the Greek **hyper,** meaning "over", and **piesia,** meaning "to press".

The heart pumps out blood into the arteries. High blood-pressure thus puts a strain on the heart and leads to heart disease—hypertensive (high blood-pressure) heart disease.

Blood-pressure was first measured in animals by an English parson, Stephen Hales, in 1733. He put a brass tube into the artery of the leg of a horse. He then measured the height to which the blood rose inside the tube. This then was the blood-pressure of the horse.

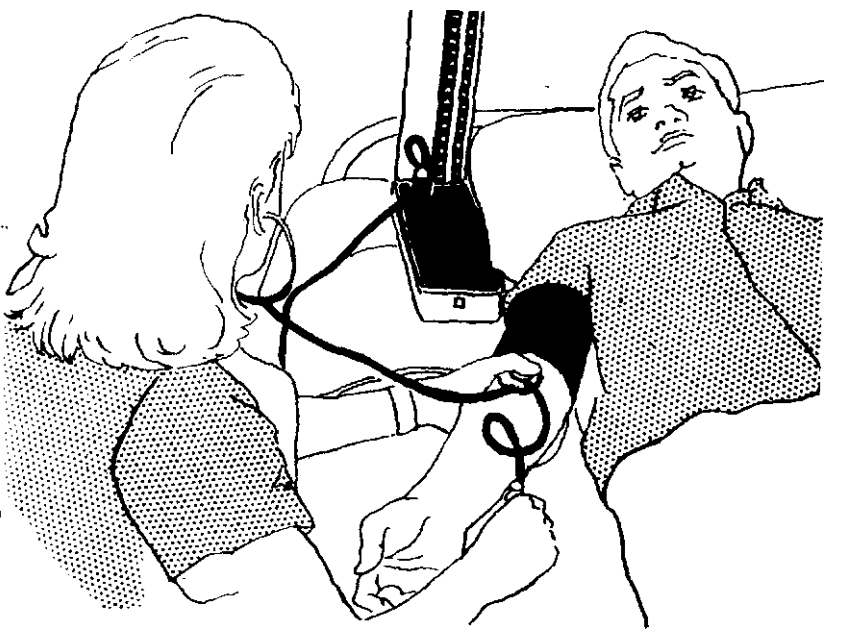
But the method is totally unsuitable for a horse, let alone a man. It is obviously impossible to puncture a man's artery and push brass tubes into it each time the blood-pressure is measured. However, if the artery is pressed from outside, till the pressure just stops the blood flowing through it, then this outside pressure is equal to the pressure of blood inside the artery. This outside pressure can then be measured, and what you get is equal to the systolic blood-pressure.

It is measured with an instrument called a sphygmomanometer, which consists of the following components :

(i) A pressure manometer (which may be mercurial or aneroid).

(ii) A compression cuff consisting of a rubber bag, which can be inflated with air, enclosed within an inelastic cloth. Both the bag and the band are referred to as the cuff. For an average adult, the inflatable rubber bag is 12 cm. wide and 23 cm. long. A wider cuff is desirable to record the blood-pressure in obese arms and in the thigh. For infants and children, small cuffs are necessary. Many cuffs are supplied with fasteners. These are more suitable, as they are easy to apply and inflate and they fit snugly.

(iii) A rubber hand-pump with a control valve to inflate the rubber bag. The pressure-control valve should not leak and should be easy to manipulate. Rubber tubes connect these parts of the instrument (manometer, cuff and hand-pump).



Blood-Pressure : Taking it in the lying down position.

Technique of B. P. determination in the upper extremities

The blood-pressure may be taken with the patient sitting up or lying down. He should be relaxed and comfortable. All clothing is removed from the arm (which is kept at an angle of 45 degrees from the body and slightly bent). The cuff is applied to the middle of the arm. The rubber bag should be so placed that, when it is inflated with air, it compresses the main artery of the arm. The artery so compressed should be at the level of the heart. If a mercury sphygmomanometer is used, the upper level of the mercury column should be at the level of the person recording the blood-pressure.

Palpatory method :

A deflated cuff is applied evenly and snugly, without any folds, around the arm. The lower edge of the cuff should be at least one inch above the bend of the elbow. Air is pumped into the bag with the hand-pump. (The cuff should not bulge or get displaced). At the same time, the pulse at the wrist or elbow is felt. When the bag has been sufficiently inflated to obliterate the artery, no pulse will be felt at the wrist or at the elbow, below the compression point of the artery. Air is then slowly allowed to escape from the bag, till the pulse at the wrist returns. At this point, the pressure on the scale is read off, and this gives the systolic blood-pressure, in millimetres of mercury. The cuff is then completely deflated.

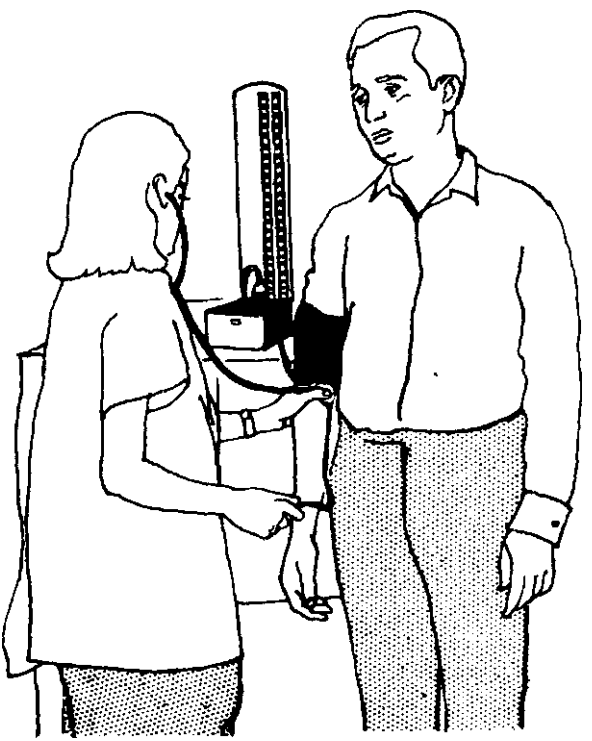
The diastolic pressure cannot be determined accurately by the palpatory method.

Auscultatory Method :

The artery is first palpated and then the bell of the stethoscope is placed over the artery at the elbow, in front. The bag is again inflated with air, to a pressure of about 30 mm. Hg. above the systolic pressure obtained by the palpatory method. The pressure is then slowly lowered. As soon as the sound produced by the pulse waves can be heard (tapping sound) through the stethoscope, the pressure is read on the scale. This is the systolic pressure. The pressure is lowered still further; the tapping sounds become murmurish, then clear and bell-like,

then muffled and finally they disappear. Just when they disappear is the diastolic pressure.

However, when a patient is having drugs which lower the pressure in the upright position, it is necessary to record the pressure in the standing position as well. For recording the blood-pressure in the standing position the subject should stand up with his arms relaxed by his side and the blood-pressure recorded exactly in the same way according to the technique discussed for a person in the sitting or lying position. It is



Blood-Pressure :
Taking it in the standing position.

essential to check the blood pressure in the supine (flat) and in the standing position especially in patients who are on drugs which reduce blood-pressure mainly in the standing position; for example, alpha methyl dopa, ismelin etc.

NORMAL PRESSURE

The normal blood-pressure in adults is about 120 mm. Hg. systolic, and about 80mm. Hg. diastolic. It is usually written thus: 120/80 mm. Hg. However, the systolic pressure may vary from 100 to 140 mm. Hg., and the diastolic from 60 to 90 mm. Hg. In older people, it may be slightly higher.

In children, the pressures are much lower—in fact, the younger the child, the lower the pressure. In the newborn for instance, the pressure may be no more than 60-80/40-60 mm. Hg. In adults, 140/90 mm. Hg. is usually considered the upper limit of a normal pressure.

The height of the diastolic pressure is considerably more significant than the systolic. There is a greater strain on the heart when it has to pump against a higher diastolic pressure.

But the pressure is not constant during the whole twenty-four hours. It is lowest in the early hours of the morning, and usually higher in the evening. It rises slightly after meals and after smoking. It rises with exercise, emotion and excitement.

A high blood-pressure invariably leads to heart disease. Statistics show that 20% to 50% of cases of heart disease are due to high blood-pressure.

In Bombay, for instance, during a five-year period from 1952 to 1956, there were 3,436 cases of heart diseases admitted to a large hospital—about 18% of them the direct result of high blood-pressure.

Over and above these cases of heart disease, cases of apoplexy and kidney failure due to a high blood-pressure also occur. The evidence, therefore, that a high blood-pressure is harmful to man, is overwhelming.

HYPERTENSION

There are two characteristic types of hypertension. The essential or benign type occurs in the middle-aged—exactly

why is not known, though several different causes for it have been postulated. It progresses usually slowly. While "essential" refers to the fact that no single cause has been found for it, "benign" points to its course.

The other is secondary hypertension, which may occur at any age. It is usually the result of some other disease, and so is referred to as "secondary'. It is, however, often curable—if the original cause can be found and removed early.

Malignant hypertension is a variety which usually starts in the 20-40 age group. The pressure is much higher than in essential hypertension (the diastolic pressure is about 140 mm. Hg.). If untreated, it progresses inexorably to a rapid fatal end.

The factors leading to essential or benign hypertension, which forms 70% to 80% of all cases of hypertension, are numerous. So only the important ones need be discussed here.

GENERAL OBSERVATIONS

Two-thirds of all cases of essential hypertension are in the 45-60 age group. Below 45 and after 60, there is a sharp drop in the number of cases. Why it should occur in this particular age group is not known. But the fact that it does occur around this age increases the risk of heart attacks in these people, for this is also the age at which the risks from arteriosclerosis are at their height.

Those who have normally a slightly high blood-pressure in their youth are more likely to develop hypertension in middle age.

High blood-pressure is more benign in women than in men. Women seem to stand a high blood-pressure relatively better than men. And the risk of high blood-pressure heart disease is also less in women. In terms of statistics, the ill effects of hypertension are seen only half as frequently in women as in men.

Heredity plays a major role in producing high blood-pressure. Some have even stated categorically that high blood-pressure is solely due to heredity. The evidence in favour of its being a hereditary disease is overwhelming. When, for in-

stance, one parent has high blood-pressure, the chances of the children having it are 25%. And from the Mayo Clinic, Rochester, have come figures which are even more startling, for they have found that, when both parents have hypertension, the risk for the children is 90%.

Studies of near-relatives of high blood-pressure patients have also shown that high blood-pressure descends down the family tree.

Hypertension has also been found in identical twins. Here, one objection has been raised: that when two persons are living under identical conditions, they may both develop a high blood-pressure due to the same external conditions rather than to their heredity. But, in many cases, the twins were living far apart. Sometimes the high blood-pressure had produced symptoms in the one and not in the other. It was only when the blood-pressure was taken in the symptomless twin that it was also discovered to be high.

RACIAL PREDILECTIONS

Some races are blessed with a relative immunity to hypertension, such as the Chinese, the Filippinos, the Puerto Ricans, Indians and the Negroes in Africa (but not so the Negroes in America and the West Indies). This racial predilection is also noticeable in the Bahamas and in the island of Curacao. In the Bahamas, pressures above 150/90 mm. Hg. have been found in 20% of young Negro male and female inhabitants alike, aged between 30 and 34. In the island of Curaçao, the picture is even worse: pressures above 140 mm. Hg. systolic are to be found in 10% of the school-children under 18. Thus it appears that some Negroes have a greater tendency to a high blood-pressure than others. Environment, therefore, must also play a part in producing high blood-pressure.

ENVIRONMENT AND PERSONALITY

The term "environment" encompasses the character and the personality of the individual—the strains he has to bear in life and his reactions to these stresses. It also probably includes

the amount of salt he eats. These are a few of the environmental factors considered to lead to hypertension.

That there is a high blood-pressure personality has been reiterated by many authors. This person, in short, is the rather driving, obsessional type, who is constantly at war with his surroundings, and is forever tilting his lance at mountains and mole-hills alike.

On the other hand, the person who accepts his place in life, who does not struggle for ever against the inevitable, usually has a lower incidence of hypertension.

It has been suggested that the stresses and strains of living provoke the secretion of certain hormones in the body. Some hormones are known to produce a rise in the blood-pressure. It is possible that this is more marked in certain individuals.

"How to make a million and also acquire high blood pressure?"

EFFECT OF SALT

People who eat low salt diets actually do have lower pressures. For instance, the primitive races, whose diets contain very little salt, are known to have lower pressures. It might be argued that the lower pressure among primitives may be due to their way of living, their carefree existence.

This is certainly possible. But from Japan has come further evidence to incriminate salt. There is a small, isolated farming community in one district of Japan, where they take salt sparingly with their food. Here the inhabitants have a conspicuously low blood-pressure. But, in the rest of Japan, where the salt intake is traditionally high, the blood pressures run high. It has been said that, while most people buy their salt by the packetful, the Japanese buy it by the barrelful! Their average intake usually is as high as 30 gm. a day, while the average consumption in Western countries is only about 10 gm. a day.

Salt is naturally present in most foods, so it may be difficult

"Give her salt man and get rid of her."

to assess the salt intake of a particular individual with any degree of accuracy. There is a good rough-and-ready guide, though, for finding out how much salt is taken. The high salt-eaters are those who add salt to all food at the table, as a routine, without even tasting it first. The medium salt-eaters are those who add salt at the table only after tasting it. The low salt-eaters never add salt at the table. The still lower salt-eaters do not have salt added to food even during cooking.

OVERWEIGHT

That there is more than a casual relation between high blood-pressure and overweight has been noted time and again in population studies, but the true nature of this relationship remains in doubt. The Society of Actuaries (Chicago) published an analysis of insurance statistics, in which they discussed the relationship of body build and blood-pressure. They found that moderate to marked overweight was often found together with a high blood-pressure, and that such patients were not good insurance risks. The overweight with high blood-pressure should, therefore, take special heed, as this combination can be lethal. It becomes even more deadly when it is accompanied by a high blood cholesterol, diabetes and arteriosclerosis.

MALIGNANT HYPERTENSION

This type of high blood-pressure, quite different from the essential or benign variety, usually affects younger patients, about twenty to forty years of age. Usually, it begins with dramatic eclat. It runs a severe downhill course, and normally ends fatally within a matter of months, unless it is treated and the blood-pressure controlled.

The main difference between a benign and malignant high pressure is the virulence of the disease process in the latter. These cases run a galloping downhill course. The height of the diastolic blood-pressure is usually about 140 mm. Hg., or even more.

Fortunately, malignant hypertension is not very common. Less than 1% of all high blood-pressure cases are malignant.

SECONDARY HYPERTENSION

Secondary hypertension is, as the name implies, secondary to some causes. That is the hopeful feature about it.

A diseased kidney is often a cause. In some kidney diseases, the blood supply to the kidney may be diminished. Deprived of blood, the kidney secretes a chemical substance in the blood, which raises the blood-pressure.

Occasionally, a tumour of one of the endocrine glands may lead to a high pressure. The tumour acts by producing excessive amounts of a blood-pressure raising substance.

In secondary hypertension, then, where the cause can be removed in time, the high blood-pressure can be cured.

Very often, people do not know they have high blood-pressure. It is, in fact, often detected accidentally. Only regular visits to the doctor will ensure that a rising pressure is discovered in good time.

SAMPLE CASE HISTORIES

The cases given below illustrate the salient features of different types of hypertension.

A man aged 55 was persuaded by his wife to consult a doctor. His complaints were severe headaches, giddiness and palpitations. These symptoms were present for over two years, but had become worse during the months before he went to the doctor. He also had great difficulty in concentrating — he could not even read the morning newspaper. He had been feeling unduly tired — more than he could blame on the work at the office or on the weather.

The answer came immediately after the medical examination. His blood-pressure was high. Fortunately, it was not excessively high; he belonged to the group known as essential or benign hypertension, and with treatment he did well.

Then there was a woman of 24 who started having symptoms suddenly. But these would come and go. There would be intense headaches, palpitations, giddiness, sweating and

flushing. In a short while, they would all pass off, only to come again after some time. She was discovered to have a tumour of the adrenal gland — the endocrine gland which sits on top of each kidney. This gland normally secretes many hormones, two of which are adrenalin and noradrenalin. When there is a tumour of this gland, vast amounts of adrenalin and noradrenalin are pumped out suddenly into the circulation. The result is a sudden and dramatic increase in the blood-pressure, giving rise to headache, palpitation, dizziness and so on. The tumour was later removed and the pressure fell. The high pressure had been secondary to the adrenal tumour.

The case of a girl aged 15 with high blood-pressure also ended happily. Her high blood-pressure was discovered by the school doctor, during a routine medical examination. She turned out to have a narrow segment in the aorta, the main artery in the body. She had a high blood-pressure in the arms above the narrowing, though not in the legs below it. Removal of the narrow segment and its replacement with a graft normalised the pressure and gave her a new lease of life.

In short, a high blood-pressure may or may not give rise to symptoms. Headache, dizziness, palpitations, lack of concentration, tiredness are some of the symptoms. Over and above these, however, and far more important are the effects of the high pressure on the heart, the brain, the kidneys and the eyes. Heart failure, strokes, kidney failure and blindness are all of grave omen.

A stroke is always a serious affair. The constant pounding of a high pressure on the walls of the arteries in the brain may rupture a blood-vessel in the brain. The patient may lose consciousness, and may have paralysis of half the body on the side opposite to the rupture. (The left side of the brain moves the right side of the body, and vice versa.) A high pressure, however mildly high it may be, puts a strain on the heart, the blood vessels and the kidneys.

MANAGEMENT

One of the most essential factors in treating hypertension —in fact the most difficult part of the treatment — is the

change often necessary in the temperament, personality and way of living. Sedatives, regular hours and relaxation all help to obtain the mental and physical respite which these patients often so badly need from the rat race of today. It is for this reason that some are put to bed at the beginning of the treatment. The blood-pressure soon falls, especially if it is a mild and benign hypertension.

A vast array of drugs is also now available for reducing blood-pressure. Many of these are very potent. Probably more potent ones will be available in future. Combinations of two or more drugs have been found more useful than single ones. They enable lower doses of drugs to be used, and thus avoid or minimise any possible toxic effects of any one drug. But drug therapy, in order to be successful, must be continuous. Treatment is often a life-long affair.

Sometimes operations are advised for high blood-pressure, especially when the pressure is secondary to some cause. If the cause can be removed, it may be possible to lower the blood-pressure. When an operation becomes necessary, it is best not to delay it, or there may be irreparable damage from the high pressure.

High blood-pressure is dangerous. Life Insurance records covering millions of people have shown that a pressure of 130/90 millimetres of mercury (mm. Hg.) in a man aged 35, who is otherwise healthy, decreases his life expectancy by 4 years. A pressure of 140/95 mm. Hg. decreases it by 9 years and a pressure of 150/100 mm. Hg. by about 16 years.

It is therefore important to treat all cases with a high pressure, no matter how small this rise may be.

Early detection and adequate control by checks at regular intervals are the keynotes of successful treatment.

Change your way of living, which means regular hours of work and play, of rest at night and during the week ends.

Mental relaxation is just as important as physical recreation. Physical & Yogic exercises to relax your mind and body are very useful.

Cut down your weight if you are overweight.

You may be one of those who can be helped by avoiding salt (including rock-salt). So reduce it to a minimum.

Report to your doctor regularly, so that he may be able to change the dose or change the drug and give you the maximum possible benefit of the treatment.

When further treatment is advised, do not delay it. Report to your doctor immediately any of the following symptoms while on drug therapy:

(a) mental changes (Rauwolfia or its alkaloids)

(b) Giddiness, dizziness or fainting (Methyldopa or Ismelin)

5

Low Blood-Pressure

THOUGH low blood-pressure can hardly be termed a disease, it is included here especially as many people with a low pressure regard themselves as being ill. Nothing could be further from the truth, yet nothing can persuade them that they are indeed fortunate to have a low blood pressure and that they will not suffer from the ill effects of high blood-pressure.

Why do people have low blood-pressure?

There is no doubt that a low pressure does run in certain families: no matter what they eat, how they live or which age they have reached the blood-pressure continues to be low. No doubt there are other causes too for a low blood pressure. The pressure can, for instance, drop after a heart attack, after a severe bleeding or after an accident. It may even be low due to a disease of the valves of the heart or of the adrenal glands (which by the way is known as Addison's disease). An exceedingly rapid heart rate or heart failure may also cause a drop in the blood-pressure.

In the absence of these disease conditions, by and large, it may be safely affirmed that low blood-pressure is usually not due to heart disease, nor does it cause heart disease. The most common cause of low blood-pressure is essentially benign; either, as already mentioned, it is a trait in the whole family, or it is a characteristic of the individual concerned, a characteristic of his body-build and constitution.

What are the characteristics of low blood-pressure?

It is usually found in a certain type of person, slim, tall,

rather frail-looking man or woman. It may be discovered at any age and often persists throughout life.

It may be brought to the patient's notice for the first time after standing for a while, in a hot room, when there may be a feeling of faintness or dizziness. If the head is promptly lowered or if the patient sits down and puts the head over the knees, the attack may pass off, only to return when the same set of circumstances is repeated.

This type of attack is particularly common in those with "neurocirculatory asthenia", a condition which will be discussed later.

Sooner or later the doctor is consulted for these faints and spells of dizziness or light-headedness. Sooner or later someone tells the patient that the blood-pressure is low, sooner or later the patient begins to worry about it and then the whole sequence of events may be exaggerated in the patient's mind and fresh symptoms imagined where none existed before.

What should be done in cases of low blood-pressure?

Preferably nothing, especially if it is, as it usually is, benign in origin.

But if it seriously handicaps the patient, if he is afraid to go to a place in case he faints, he may try wearing a simple abdominal belt, as pressure on the abdomen undoubtedly helps in avoiding the faint feeling. Elastic stockings have also been advocated, but are probably too hot for most tropical countries for daily use. If the feeling should occur on standing up, it is best to sit down immediately and lower the head; in a few moments all will be well again.

Drugs may occasionably be required. But there is no need to take them permanently.

6

Arteriosclerosis Or Hardening Of The Arteries

IT HAS been said that you are as old as you feel, that you age only when you think you are old and not before! There is far more truth in this popular saying than most people would suspect, for what you think depends largely on the state of your brain, and the brain, like any other organ in the body, is as young as the arteries which bring to it the blood so vital for its existence.

The ageing process in the arteries may begin at any age, even in infancy. Usually it starts in the early years, but manifests itself between 45 and 60. It has been called arteriosclerosis; **arterio** refers to the artery, **skleros** comes from the Greek word meaning hard. For in this condition, the blood-vessels become hardened and considerably narrowed. Hardening of the arteries was detected even at the age of 22, in young American soldiers killed in the Korean war. By the age of 50 the incidence of arteriosclerosis soars to over 90%.

PROCESS OF HARDENING

For a better understanding of the process we may trace the changes which occur in the blood-vessels from youth. Very simply, it starts with deposits of fat (cholesterol) in the wall of the artery. The lining of the artery, over these fatty streaks, is first raised and then shed. Shallow ulcers are left, ulcers with fat at their base. Later, calcium is deposited, scarring occurs and the artery becomes narrow as well as hard. The stream of blood flowing through it is thus slowed down and cut down too. Later, a clot may plug the artery and then the blood flow

through it stops altogether. The results, in either case, are serious, often catastrophic.

DANGEROUS RESULTS

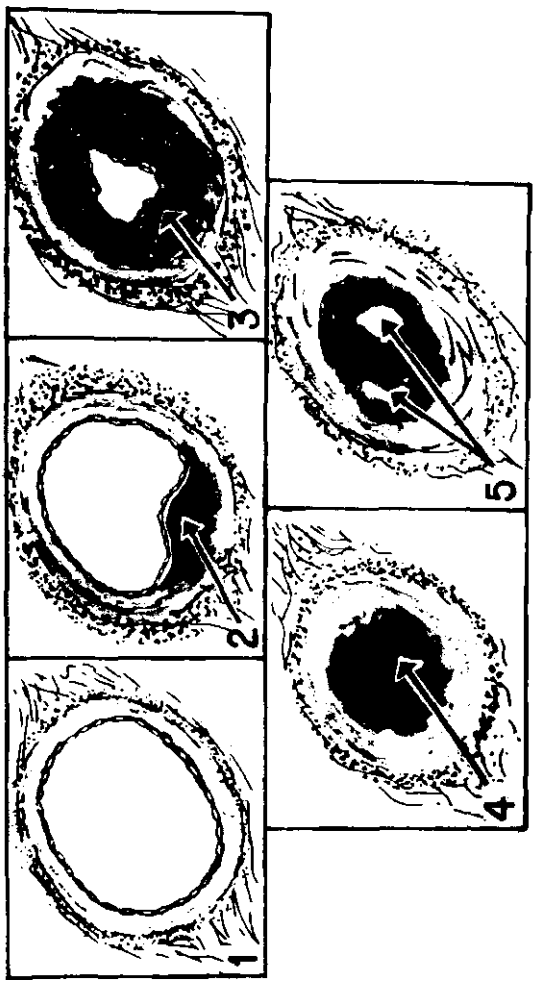
Suppose such an artery is carrying blood to a portion of the heart muscle. When the blood flow is slowed up and cut down, the heart muscle does not get as much blood as it used to. This means that it also does not get as much oxygen and nourishment as it used to, for these come with the blood stream. So what happens? Perhaps nothing, if the heart is beating at its usual steady rate. But suppose the rate is stepped up, as of course it is during exercise or during an emotional upsurge: the oxygen requirements of the heart muscle are also stepped up, **pari passu** with the increase in rate. And if more blood cannot be brought by the diseased and distorted artery, the heart muscle will feel the lack of oxygen. This will be felt as a pain in the chest, a pain which is squeezing or constricting, a pain called angina, signifying the cry of the heart for more blood (oxygen).

Should the flow of blood through the artery stop altogether, the result may be disastrous. A fatality may be averted, but that portion of the heart muscle which has had its blood supply cut off may not be able to survive. True, other arteries all round it will dilate, new blood-vessels will be opened up, but they will never entirely succeed in bringing enough blood to the affected part. And when this portion of the heart muscle dies, a scar will be left, a scar which will remain on the heart for ever.

When this happens to an artery supplying a part of the brain, the results are equally serious. There may be transient attacks of giddiness at first, followed by paralysis of an arm and leg, in other words, a stroke. Sometimes it is even more serious, there may be a haemorrhage into the brain and a fatal termination.

It is because of these very serious results of arteriosclerosis that attempts are now being made all over the world to find out how it can be prevented. Ultimately, it may even be possible

to reverse the changes after they have occurred. But at present we have to pin our hopes on prevention.



Hardening of Arteries :

(1) *Normal Artery.* (2) *Deposits under the inner Lining.* (3) *Channel narrowed.* (4) *Channel blocked by blood clot—This leads to the Heart attack.* (5) *Recanalisation and recovery from heart attack.*

What causes Arteriosclerosis?

This is a question not easy to answer. In the first place, arteriosclerosis occurs inside the blood-vessels, inside the body. The blood-vessels cannot be seen. You can see those behind the eye with an instrument called an ophthalmoscope; you can after injecting a dye see the shadows of other blood-vessels on an X-Ray plate. Therefore, you can only presume arteriosclerosis has occurred, from symptoms coming from different organs, such as the heart or the brain.

Epidemiological studies in various countries have revealed some interesting features about the background of arteriosclerosis.

Heredity is undoubtedly important. If you come from a family with a more than usual tendency to arteriosclerosis, you really should take twice as much care of your arteries.

Sex makes a difference, for arteriosclerosis is far more frequent in men then in women, at least in the younger age groups, before the change of life or menopause. Perhaps the female sex hormones are the answer, because after the menopause the incidence of arteriosclerosis in women rises, not as high as in men, but certainly higher than in the pre-menopausal years.

The diet has been intensively studied and extensively blamed. Some ascribe arteriosclerosis to diet, though others may not go so far.

Briefly, there are three things in the diet which have been held responsible: the total quantity, the amount of fat and the type of fat consumed.

There is no doubt that some people consume vast quantities of food, far more than they really need. What happens to this excess? It is converted into fat, carried by the blood to the fat depots of the body and stored. The surplus fat overstrains the fat transport in the blood and fat storage, too. Then there are the highly processed foods, a bane of modern civilisation, foods which have been denuded of all vitamin and mineral content. Such foods are brimful of calories. These are all potent arteriosclerotic generators; in other words, they are atherogenic.

The fat content of the diet and the type of fat you eat also have great significance. As a rule, the higher you are in the social scale, the more fat you can afford, the more fat you, therefore, usually consume. In the ideal diet, only 20% to 28% of the calories should come from fat. As this figure rises, you are in the arteriosclerotic high-risk group. In the United States, the death rate from heart disease, which was 25% in 1925, had risen to 53.3% in 1955, and most of these were the end result of arteriosclerosis. Why? It could have been the increasing consumption of dairy produce, of animal fats. Further proof came from other countries when prosperity was soaring. In Sweden and Finland, for instance, when cream, butter and animal fat began to be eaten in increasing quantities, the arteriosclerosis rates also increased. Then came World War II and with it rationing. All dairy produce and animal fats were severely curtailed and this had a miraculous effect on the arteries. Arteriosclerosis rates slumped, they reached an all-time low at the end of the War. But when rationing was repealed, arteriosclerosis rates again went up. This was more than a mere coincidence, it was definitely cause and effect. Even more interesting is the incidence of arteriosclerosis in people of the same ethnic group, but, with different dietetic habits. The Japanese, living on the island of Okinawa, where the staple diet is fish, rice and sweet potato, have a far lower incidence of arteriosclerosis than their brethren in Hawaii and California, who eat more fat

The fats which have been found to be "bad" for arteriosclerosis are the "saturated" ones, the natural saturated ones as in cream, butter, ghee, animal fat and coconut oil, as well as the artificially saturated or hydrogenated ones like margarine and vanaspati. The "good" fats are the unsaturated ones, the oils of maize, sunflower, safflower (kardi), gingelly, til and some fish oils. No one can be expected to eat food cooked in fish oil, but the other oils are quite pleasant and practically tasteless; in fact, they are frequently used in India. But this regimen has to be started in childhood and continued. Infants who have been reared on full cream milk, extra calcium and quantities of vitamin D far in excess of their daily requirements, are heading for hardening of arteries.

Recently, it has been suggested that sugar (sucrose) also plays an important role in arteriosclerosis. However, this has not been confirmed yet.

The softness of the water has also been incriminated. It was noticed for instance that people living in areas where the water is soft are somehow more prone to arteriosclerosis. Why should this be so? It may be merely speculation, but the water softening process may have something to do with it. However, this is still in the realm of speculation.

TO AVOID ARTERIOSCLEROSIS

The American Heart Association has laid down an eight-point programme for avoiding arteriosclerosis :

1. Eat less of saturated fat (cream, butter, ghee, animal fat, etc.)
2. Substitute vegetable oils and other unsaturated fats for saturated ones wherever possible
3. Eat less of food rich in cholesterol (egg, liver, brain)
4. If you are overweight, reduce your caloric intake
5. Start applying these principles early in life
6. Make sound food habits a family affair
7. Seek professional advice when changing your diet, so as to avoid any nutritional deficiencies
8. Adhere consistently to the altered diet pattern

Exercise, taken regularly, will help to utilise any surplus calories. This is all right as far as the diet goes, but there are other factors too leading to arteriosclerosis. High blood-pressure is one, diabetes another.

Then there is the question of stress. Arteriosclerosis is said to be a disease of civilisation. It is the result of the stress of civilisation. How do some of us escape arteriosclerosis? Lack of "civilisation"? Lack of stress? No one really knows. Stress we all have, but perhaps our attitude towards it varies.

Being overweight, having diabetes, these too add a burden to the arteries. And when the level of fat (cholesterol) in your blood is running high, it is really time to take stock, to check on everything.

7

Pains In The Chest (Angina Pectoris)

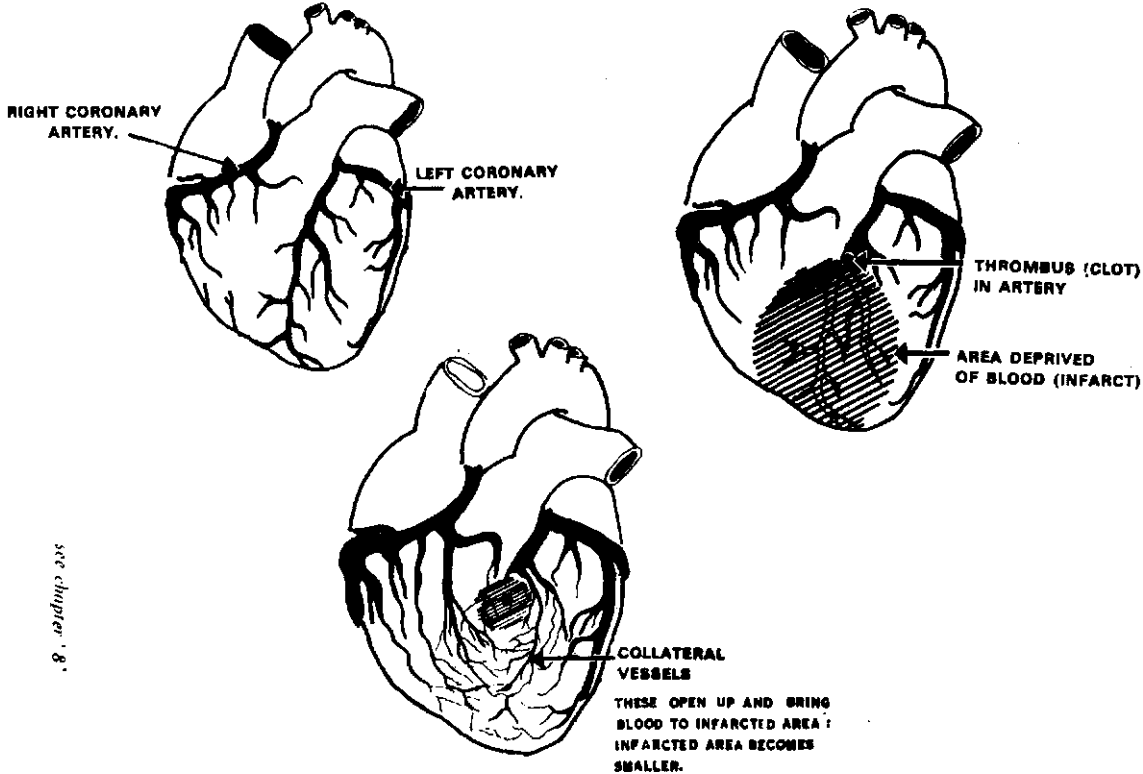
THE CHEST is so closely associated with the heart in the lay mind that almost any ache or pain in the chest raises a doubt of heart disease. While these chest pains may indeed be due to heart disease, there are other aches that are definitely not due to the heart.

What causes pains in the chest?

The coronary arteries must be healthy to carry to the heart muscle adequate supplies of blood. When they are not, when their lumen has become narrow and their elasticity is lost, the blood flowing through them diminishes. The heart muscle is deprived of its essential requirements of blood and oxygen, the cry of the heart muscle is felt as pain. When the deprivation of blood is only a temporary one, the pain is also of a short duration. This is called "angina pectoris" (**angina**=strangling; **pectoris**=breast-bone or breast). When the deprivation of blood is prolonged, as after a clot in the coronary artery or thrombosis, the pain continues for a long time and eventually the portion of muscle affected dies. This is then called "myocardial infarction" or "coronary thrombosis". (discussed in the next section).

The relationship between the attacks of anginal pain and arteriosclerosis was pointed out as long ago as 1772, by Jenner, a Scottish physician. He is today much better known for having introduced vaccination against small-pox. Jenner himself could never have realised the implications of his observations. No one else in his day did so either!

The first vivid description of this disease was given by



How a heart attack occurs and how the heart recovers

see chapter '8'.

Seneca, the Roman philosopher, who himself had angina: "The attack is very short and like a storm. It usually ends within an hour. To have any other malady is only to be sick, to have this is to be dying."

The anginal pains in the chest are more common in the middle-aged, though they seem to be occurring with increasing frequency in the thirties and even in the twenties. They are particularly likely to affect those with diabetes, those with high blood-pressure, those with hypercholesterolaemia or those who are overweight. There is no doubt that they are also more common in certain families than in others.

What are the attacks of anginal pains like?

They are usually brought on by exertion, by an emotional outburst, by a large meal or by sudden exposure to cold. The typical example is that of a middle-aged man, who after a heavy breakfast emerges out into the cold, walks briskly up an ascent and feels a sharp pain in the chest. He stops for a few minutes for it to disappear and then proceeds slowly.

The pain is brought on by exertion, it is in the centre of the chest (breast bone) and then may radiate to the left shoulder and left arm. At times it goes upwards to the throat or to the back or down both arms. Sometimes the pain in the chest is absent, the pain being felt only down the left arm. It is described so graphically by the sufferer that there can be no mistaking its origin in the heart. It is said to be oppressive, squeezing, constricting or cramp-like, as if the chest were held in a vice and compressed very tightly. At the same time, there may also be a lump in the throat or a heaviness between the shoulder blades at the back.

But much more terrifying than any of these is a sense of foreboding, of impending death (**angor animi**) which accompanies the pain. The sufferer breaks out in a cold sweat, he looks frightened, anxious and pale, he stops doing whatever he is doing. If he is walking, he stops dead-still, if he is in the house he sits down. Within a few minutes the pain passes off, and the whole episode is over, but the memory of it is so vivid that it is not forgotten. The pain may come again and again, some-

times once or twice a day, sometimes ten or twenty times a day. Occasionally it even wakes up the patient from his sleep, especially after he has had a disturbing dream or a heavy meal. Emotional upsets play a very important part. John Hunter (1728-1793), a famed London surgeon, who suffered from angina pectoris, used to say, "My life is in the hands of any rascal who chooses to annoy and tease me". He had an altercation with a colleague at the St. George's Hospital, London, lost his temper, suffered a heart attack, and died.

How is it possible to know that it is angina and nothing else?

When the site and character of the pain are typical, the diagnosis is usually easy. The pain of coronary thrombosis is indistinguishable from that of angina; only its duration is prolonged and it usually occurs at rest and not during exertion as in angina.

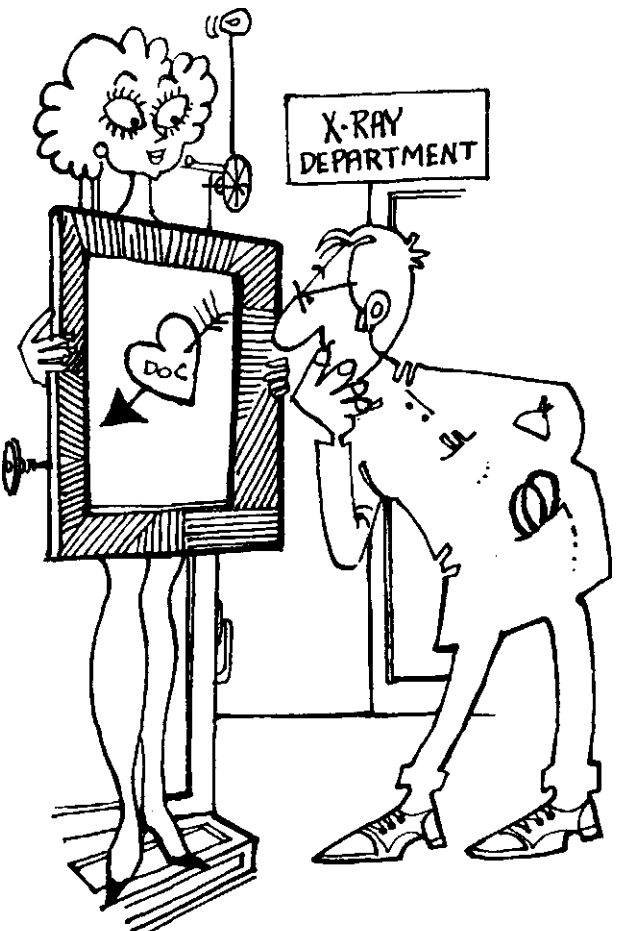
Then there are other pains in the chest, not due to the heart at all, but due to some other cause altogether. A chill or inflammation of the lung or pleura, fibrositis in the chest wall (commonly mistaken for rheumatism), chronic inflammation of the gall bladder or gas in the stomach or colon—all these have been mistaken for heart pain. The position of the heart, its nearness to other organs and the fact that it shares a common nerve supply with the surrounding parts lead to the confusion. This becomes worse confounded when there is also true angina present.

Fortunately, pains in the chest may frequently be due to other causes, benign compared to those discussed above and probably due to mere nervousness. Such pains also originate in the chest, but rarely exactly in the mid-line. More often than not, they are described as being on the left side of the chest, where most people think the heart is situated! The pain itself is of a different sort altogether: it may be described as a pricking sensation, or a stabbing or shooting pain. Usually, it remains where it starts and does not travel anywhere else, but occasionally it has been said to go down the left arm. It does not necessarily start during exercise or even after the meal of a gourmand, but it often comes at the end of the day when

the person is tired. While true angina passes off in a few minutes, this pain may go on much longer.

What is the outlook for patients with pains in the chest?

The cause of the pain should be ascertained; if the pain is



"Heartaches can be of different kinds."

really due to angina, there is no reason to be despondent. It would be necessary to alter one's way of living and take a few precautions. These will be discussed in the section dealing with life after a heart attack. The pains of angina are a warning; if the orange light is heeded in time, all may yet be well.

If some other organ is shown to be the cause of the pain, it is well to have it treated promptly and efficiently. If for instance, the gall-bladder is diseased and gall stones are present or if there is a stenotic valvular lesion in the heart, it is best to follow the doctor's advice.

If the pain is not due to the heart or to disease of any other organ, then it may be said to be due to nervousness, to causes which are in the mind or in the subconscious. Once this is ascertained—and no one except your physician can do that for you—then treatment along the correct lines can be obtained.

MANAGEMENT OF ANGINA PECTORIS

Exertion & Nitroglycerine :

Avoid the exertion which usually produces the chest pain. If the exertion is absolutely unavoidable, suck a tablet of nitroglycerine (glyceryl trinitrate) about five minutes beforehand. Always carry a fresh stock of nitroglycerine tablets in an amber coloured bottle.

If there is chest pain or distress on exertion, stand or sit still and suck a tablet of nitroglycerine immediately. Try to find out what brings on the attacks and avoid it. The minimum effective dose of nitroglycerine should be used to avoid unnecessary side effects.

If the patient feels faint after the nitroglycerine he should sit down for a few minutes. Patients are more likely to faint if nitroglycerine and whisky are taken together, or if it is taken immediately after a heavy meal or in the presence of low blood pressure, etc. If chest discomfort is not relieved, another nitroglycerine

may be taken after 2-3 minutes. More should not be used, even if no relief is obtained.

Body Weight :

Reduce your weight to the optimum level or even below it (refer to Diet and Weight Chart).

DIET

Avoid :

Cream, butter, ghee, margarine, vanaspati, and all other saturated oils and fats. Also icecream, cake, pastry, pie, cheese, fried food, yolk (yellow) of egg, offal, shellfish and excessive salt intake.

You may have :

Skimmed milk, buttermilk, cottage cheese (panir), Green-vegetables, legumes (peas and beans), fruit, lean meat, chicken, fish, moderate amounts of starch and sugar (carbohydrates), chapatti, rice, bread, potato, jam, marmalade, jelly, honey, syrup.

For cooking use only vegetable oils, in small quantities. Safflower (kardi), til or gingelly oils are the best.

This diet is low in fat and cholesterol, both of which cause narrowing and hardening of the arteries (arteriosclerosis). As the arteries have to carry blood which is vital for the heart and for the brain, it is essential to keep them healthy. Arteriosclerosis leads to heart attacks, heart pains and strokes.

Meals :

All meals should be small. Never eat late at night. Avoid exertion for at least an hour after meals.

Weight :

Preferably weigh yourself every week. Change in weight more than 2 kg. should be reported to your Doctor.

Smoking :

Tobacco in any form is taboo.

Alcohol :

Alcohol in moderation is permissible if you are accustomed to having it. But it contains calories, alcohol also increases appetite and this may lead to an undesirable increase in weight.

General Information :

Altitude above 5000 ft. (1600 m.) should be avoided, air travel in pressurised planes is safe except for the very ill patient. All infections particularly respiratory should be promptly controlled. Chilling and cold wind should be avoided. Patients getting anginal attacks are most comfortable in temperate climate. Cold weather is more likely to precipitate angina. Wear warm clothing if cold. Extreme heat should also be avoided. Air conditioning is helpful.

Tea and Coffee :

May be taken in moderate quantities.

Bowels :

Avoid straining. Keep the bowels open, if necessary with mild laxatives or an enema occasionally. Prunes and figs in diet are helpful.

Work and Activity :

If the occupation is such that produces frequent and repeated attacks of pain, a reconditioning programme may help you to get over your difficulties. Avoid working long hours at a stretch.

Under medical supervision graded exercises (gradually increasing activity), walking, skipping, climbing and running are very helpful. With this type of training the patient usually improves remarkably and gets rid of his angina.

Exertion after food brings on the chest pain, it is therefore essential to rest after meals.

Driving Car :

Driving in crowded areas and long distances be avoided.

Sex :

It is likely that, in most persons, the prolonged tension resulting from abstinence exceeds the greater but briefer strain of sexual relationship. Sexual intercourse may precipitate angina. In many patients, the problem is solved by the prior use of nitroglycerine plus instructions for the healthy partner to assume the major responsibility for the required physical activity.

Sleep :

About six to eight hours sleep is required every night, if necessary, with the help of tranquillisers or sleeping pills.

Diabetes :

Should be properly controlled.

B. P. :

High blood pressure should be controlled.

Mental Equanimity :

Heated and animated discussions, excitement, tension, anxiety and extremes of emotion are strictly undesirable. If it is not possible to avoid a difficult or exacting situation which is likely to produce the pain, a tablet of nitroglycerine may be sucked beforhand. Try to be cool, calm and collected at all times. This will make life easier for you (and for those around you) and will vastly benefit your heart.

For periods of strain and anxiety, tranquillisers and sedatives may be required. Yogic exercises to relieve mental and physical tension are very useful. They are not difficult to learn. Your physician wil prescribe the appropriate exercise which will help you.

Contact your doctor immediately in case of pain in chest, shortness of breath, palpitations, gain in weight, swelling of feet, inability to sleep flat in bed, tiredness, fainting and any other new symptoms.

8

Heart Attack (Myocardial Infarction)

THERE is no doubt that heart disease kills and maims more persons in the prime of life than any other single disease.

The figures for heart disease, moreover, have been steadily rising over the decades, even though the death-rate from all causes has been steadily falling. The fact that coronary disease accounts for about a third of the fatal cases of heart disease is also very significant. And it is clearly seen, both from the clinical cases of heart disease and from the postmortem data, that coronary disease is increasing every year.

The reasons for this are perhaps better understood today than ever before. This is because evidence is accumulating as to why and how diseases of the coronary arteries are caused. Briefly, it may be attributed to the combined effect of the stresses of life, of the type of diet we eat and, most important of all, of what we inherit from our parents.

Coronary heart disease strikes all ages and both sexes, but most often it affects those in the middle years of their lives. The fact that coronary heart disease is more liable to attack the professional than the manual or agricultural workers makes it especially unfortunate, for the country is thus robbed of leadership and enterprise.

Heart attacks usually result from a closing off of an artery which carries blood to a portion of the heart muscle. That arteriosclerosis can narrow down the blood-vessel, we well know. A stage further, and a clot or spasm may obstruct the artery completely.

When the blood flow stops, or when the requirement of

the muscle is more than the supply, the heart muscle cries out for want of blood and a severe pain is felt in the chest. If the clot moves on, or if collateral circulation (circulation from the surrounding areas) is adequate, all may be well. If not, the portion of heart muscle dies for lack of blood. In time, the dead muscle is fortified and replaced by scar tissue; but it never again becomes muscle. The blood-vessels around the area may dilate and proliferate, in an attempt to bring more blood to the affected part, but the attempt is never completely successful. A part of the heart is dead and the scar remains. The heart bears this scar for the rest of its life.

This is the chain of events if the blood-vessel that is shut off is a small one, and consequently the portion of muscle affected is also a small one. But what of those cases where the artery is not a small one, where the portion of heart muscle affected is considerable? They are not so fortunate, but even in these cases there may be good recovery.

SAMPLE CASE HISTORY

This may perhaps be best described from the case notes of Mr. Raman. He was a man of about fifty, a successful business man who spent most of his day sitting in the office, who had all the usual worries of his work and his home. He lived well and was fond of good food, but had no time and no energy for any exercise, with the result that he came home in the evening and collapsed in an easy chair, till it was dinner time, and then retired to bed, too tired to do anything. No wonder he was overweight.

His blood-pressure was on the high side, but he had this treated only when it bothered him, discontinuing the treatment the moment he felt better. His father and grandfather had both died of heart attacks. This had genuinely distressed him at the time, but he did not believe it could happen to him, even though he had one or two warnings in the form of anginal pains in the chest after some unaccustomed exertion.

One evening he went to bed as usual, at about eleven, after a large meal at ten. All seemed well, till about two in the morning, when he woke up with an agonising pain in the middle

of the chest. He felt sick and vomited, but this did not relieve the pain. It became worse and he could no longer stay still; he became restless and then actually rolled in agony, with the sweat pouring from his whole body.

The doctor was called and he immediately said that it was a heart attack (coronary thrombosis or myocardial infarction). But, even before the doctor had given his verdict, Mr. Raman knew that this was not the ordinary pain of angina he had known before.

THE COURSE OF AN ATTACK

The pain of a heart attack is indeed similar to that of angina. It is localised in the centre of the chest, behind the breast-bone. The character of the pain, which has been called "constricting", "agonising" or "excruciating", is prolonged. Occasionally, pain is felt only in the left arm or throat or back, and not in the middle of the chest, but this is exceptional. The pain lasts much longer than any pain of angina ever does. Moreover, it comes usually when the patient is at rest, and not during exercise, as angina does.

Very seldom, the pain may be absent altogether (myocardial infarction sine dolore), and it may be difficult to come to a diagnosis, except for the accompanying signs of shock, sweating and the feeling of death that these patients often describe. While no doubt the pain is one of the worst that can be suffered by man, it helps in making the correct diagnosis with the least possible delay and in starting the treatment at the earliest possible moment. The ECG is very helpful in making a diagnosis

The first few days are always the most critical. Each day that passes, however, is so much to the good and improves the chances of eventual recovery.

While patients do well after an attack, the individual factors that determine the completeness of recovery will naturally vary from case to case.

Some may be left with attacks of angina, which occur after exertion, after a heavy meal late at night, or after running for a bus.

With a few precautions, these can be avoided. The outcome really depends on the extent of narrowing of the coronary arteries, on how much of the heart has been scarred and on how efficiently the unaffected part is able to function.

OCCUPATION AND STRESS

There are certain factors that may predispose to heart attacks. These are mentioned here only because they are to a certain extent avoidable, and this knowledge may be of help to patients who have anginal attacks or high blood-pressure and who may develop a heart attack at some time.

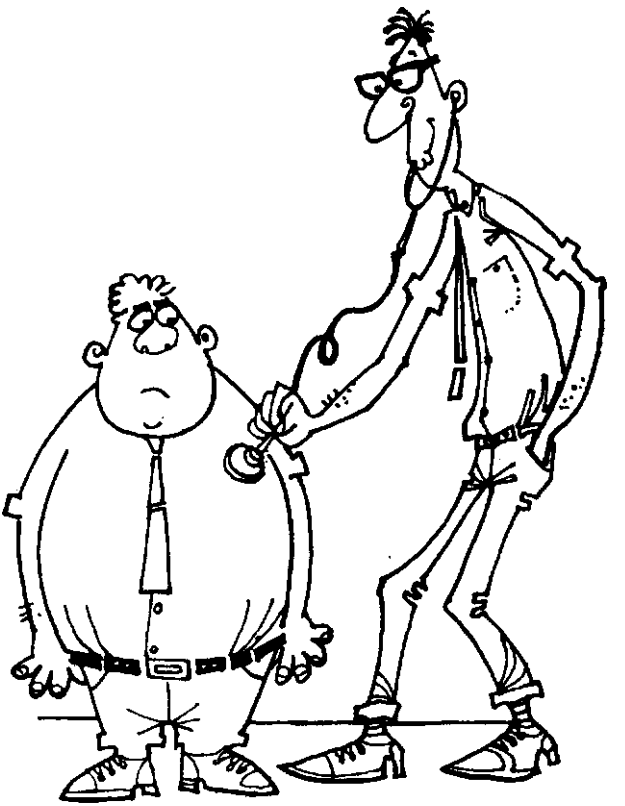
Statistical data have shown a definite relation to the type of occupation. For instance, heart attacks are more frequent among London bus drivers than conductors. Why should this be so? Bus drivers and bus conductors in the London area lead lives that are more or less alike : they live in the same localities, eat the same type of food, have the same hours of work and the same holidays. But a notable difference between them is the amount of exercise they take : the bus conductor has to run up and down the stairs to collect fares from passengers on the upper and lower decks of the bus; the bus driver sits in one place for most of the day, in his seat, and is subjected to the stress and strain of driving.

This difference has also been found in post-office employees, postal clerks and telephonists, who have a higher incidence of heart attacks than postmen; and postmen have to walk miles every day, while clerks and telephonists are sedentary at their jobs.

The relation between the social class and a heart attack is also striking. It is highest in the top-most social class, which includes professional people, business men, bankers and the like. It is lower in the second set—clerks, telephonists and other white-collar workers; and it is lowest of all among manual and agricultural labourers. One reason may be the greater degree of stress and responsibility in the upper social strata, another may be the greater physical activity of the lower ranks. Whatever it is, the difference is there and it is appreciable enough to be evident in the statistics.

CONSTITUTION

The constitution is also known to be important. Those with short, stocky and muscular figures are infinitely worse off than the wiry, lanky type. Someone has ingeniously determined the relative frequency of these two types in London



"The sound of music."

bus drivers and conductors by measuring the trousers which are made for them as part of their uniform. Needless to say, the larger sizes are almost always for the bus drivers.

PREVENTION

It is too late for us to choose parents with a negative history. It may not also be possible to govern the choice of occupation one has to follow. But the amount of stress that falls to everyone's lot can be mitigated according to the individual's temperament and outlook; and, certainly, regulation of food and exercise is in one's hands.

AFTER AN ATTACK

On an average, after an attack, rest for about six weeks is necessary, as it takes about that time for the damaged heart muscle to heal, depending upon the size of injury. At first, the rest is rigidly enforced in bed, but, as time goes on, the heart adapts itself and it may be possible to allow the patient to sit up, then to dangle his feet over the edge of the bed. He may be allowed to sit in a chair for an hour or two a day, and then go to the bath-room, and so on. If the period of bed rest has been adequate, it is safe to predict that the final getting up and walking about will take at least another three weeks or so.

Irksome though this may be, it is obligatory, to allow the heart to recover sufficiently and enable the scar to be made firmer before the heart is subjected to undue strains. Many find it impossible to adapt themselves to staying in bed twenty-four hours, to lying still while others around them do all the work, even down to turning them over from side to side. Others find the most difficult part is not being allowed to go to the bathroom. But the heart is a very important organ and every little care that can be taken of it at an acute stage is more than repaid in the degree of eventual recovery.

At first, the diet is preferably liquid, but, after a couple of days, it may be supplemented, always ensuring that it is digestible and not in excessive quantities. Anything that upset the digestion before the attack should be scrupulously avoided.

After the attack, it has to be remembered that life can go on, but with a few modifications. A portion of the heart muscle has died—it has been replaced by scar tissue, not by

muscle. In most cases, it will carry on quite well, and there is no need for undue anxiety, but the physician must decide how much or how little the patient can do in future. Life can still be full, enjoyable and active, but it must stop short of breathlessness or fatigue.

This does not mean that the patient must become a recluse and retire from life altogether and that he must become an invalid. There is a happy mean, as there is in all things, and this mean can be recognised best by the patient and by his physician. Encouragement from the family, reassurance from his physician and a sympathetic attitude from the employer go a long way in helping him towards complete recovery.

While in most cases the original occupation may still be followed, it will obviously be unwise to go back to an occupation which required considerable physical activitity, when the heart cannot cope with it. Long hours of work at a stretch, without a break for lunch or tea, are to be deprecated. All week-ends must be completely off, no work being taken home for finishing before Monday. Regular holidays every year or even twice a year—preferably away from home, so that there may be no telephone and no messages from the office—are also advisable.

There are many today who are alive and enjoying life following a heart attack—even after two or more heart attacks. They are in no sense of the term invalids. Those who have taken up a hobby or a spare-time occupation are enjoying it immensely. It has helped them develop a cheerful positive outlook on life, and it has helped others to live with them.

REGULATION OF DIET

Meals should be small—a feeling that you can eat more before getting up from the table is an excellent thing. Late dinners, late nights, rowdy celebration parties are to be eschewed. Smoking is best avoided altogether, but alcohol in moderation, if the patient is accustomed to having it, may be allowed.

Dieting to reduce is needed in the case of persons who

are overweight. The heavier the body, the harder the heart has to work, so the total quantity of food taken has to be low. The amount of fats consumed also has to be reduced, for fats, particularly the saturated ones, are responsible for causing the changes in the arteries responsible for the heart attack in the first place.

WHAT SHOULD YOU DO IF YOU HAVE A HEART ATTACK?

(Acute Myocardial Infarction)

Rest:

Complete rest in bed is essential, as it reduces the work of the heart to a minimum.

Management:

Pulse, B.P., Respiration and sweating to be recorded every ½ hr. for 4 hrs. and every hour for 24 hrs. and 4 hourly later. Chart intake of fluids and output of urine for first two days, and longer if necessary. If B.P. less than 100 mm. or profuse sweating or shortness of breath or irregular pulse inform your doctor. If pulse irregular record ECG as often as necessary.

When the attack is severe all movements of the body should be assisted.

Your attendants should, however, turn you from side to side every few hours.

They should also bend and extend all the joints of your legs, four or five times a day, to prevent pooling of blood in the veins of the legs. Gradual increase in activity in bed may be allowed after a day or two and you can be propped up in bed. As your condition improves, you may be permitted to move about the room, but physical activity must be increased gradually and under no circumstances should you feel tired or short of breath.

After two to three months, if your progress is satisfactory, you may be allowed to return to work, but return to a full normal day's work should take at least another four to six weeks.

Diet :

During the first fortyeight hours, only liquids are desirable, e.g. barley water, coconut water, coffee, fruit juice, milk, tea, etc. Fruit may be permitted.

Avoid salt or salt containing items.

After that, soft easily digested foods are allowed, e.g. cooked cereals, fish, milk, soft bread, etc.

Fruits and fruit juices (prunes and figs for constipation).

Avoid anything that disagreed with you before the attack.

The caloric intake per day should be low, about 1,000 to 1,500. When you finish a meal, you should still feel hungry. After the first week, the diet may be more liberal, unless you are overweight.

All fats must be reduced to a minimum and butter, ghee, margarine, oils, vanaspati, etc., are best avoided altogether.

Food may be cooked in a very little oil of kardi (safflower), til or gingelly.

Salt (sodium) should always be restricted and much more so if there is any evidence of congestive cardiac failure (shortness of breath or swelling of feet).

Supplementary vitamins and minerals are necessary.

Tea and Coffee :

May be taken as desired.

Smoking :

Tobacco in any form (including snuff) must be strictly avoided.

Alcohol :

Alcohol is permitted in moderate quantities if one is accustomed to taking it.

Mental Rest and Sleep :

Physical and mental rest are absolutely necessary. The telephone should be removed from the sick room and all business discussions must be postponed. For anxiety, tranquillisers are required.

For adequate sleep, sleeping pills may be necessary.

Exertion :

Avoid straining while passing a stool, as it may precipitate another attack.

Excessive coughing needs to be promptly checked.

Bowels :

Mild laxatives, glycerine suppositories, glycerine syringe or glycerine and olive oil enemas may be used.

Weight :

Reduce your weight by dieting, if you are overweight. The heavier you are, the harder your heart has to work.

Future :

A heart attack does not necessarily mean the end. Most people recover from a heart attack and go on to many years of a happy and useful existence.

Sex :

Avoid sex relation for the first few weeks. (See also angina).

9

Resuscitation Of The Heart

WHEN the heart stops beating, life ceases. This is something most of us know for a fact. When breathing stops, life also ceases. This is also a fact, but for both there are exceptions—for the heart as well as for the repiration. And this is where resuscitation comes in.

Now, resuscitation for those who have stopped breathing has been widely advertised. Almost every swimming pool and popular beach displays placards showing exactly what you should do after someone is rescued from drowning. Firemen also have to learn how to do it, for the smoke of a conflagration may overwhelm people and stop the breathing. So may the fumes from a petrol engine, and this is particularly a hazard for garage mechanics.

In all cases the victim may stop breathing, but this does not mean the end. For artificial respiration, by rhythmically pressing and letting go of the chest, 20 times a minute, can (and often does) start off normal breathing again.

There seems no reason why the technique of resuscitating the heart should not be as widely known as artificial respiration. The trouble is that most people associate anything going wrong with the heart with finality, with the end!

These temporary stops of the heart may be due to some disturbance with the stimulus that sets off each beat. For the heart has a unique mechanism for initiating each beat. It has, so to speak, its own built-in pace-setter. This pace-setter sends out, regularly 70 to 80 times a minute, small electrical discharges which make the heart muscle contract and make the heart

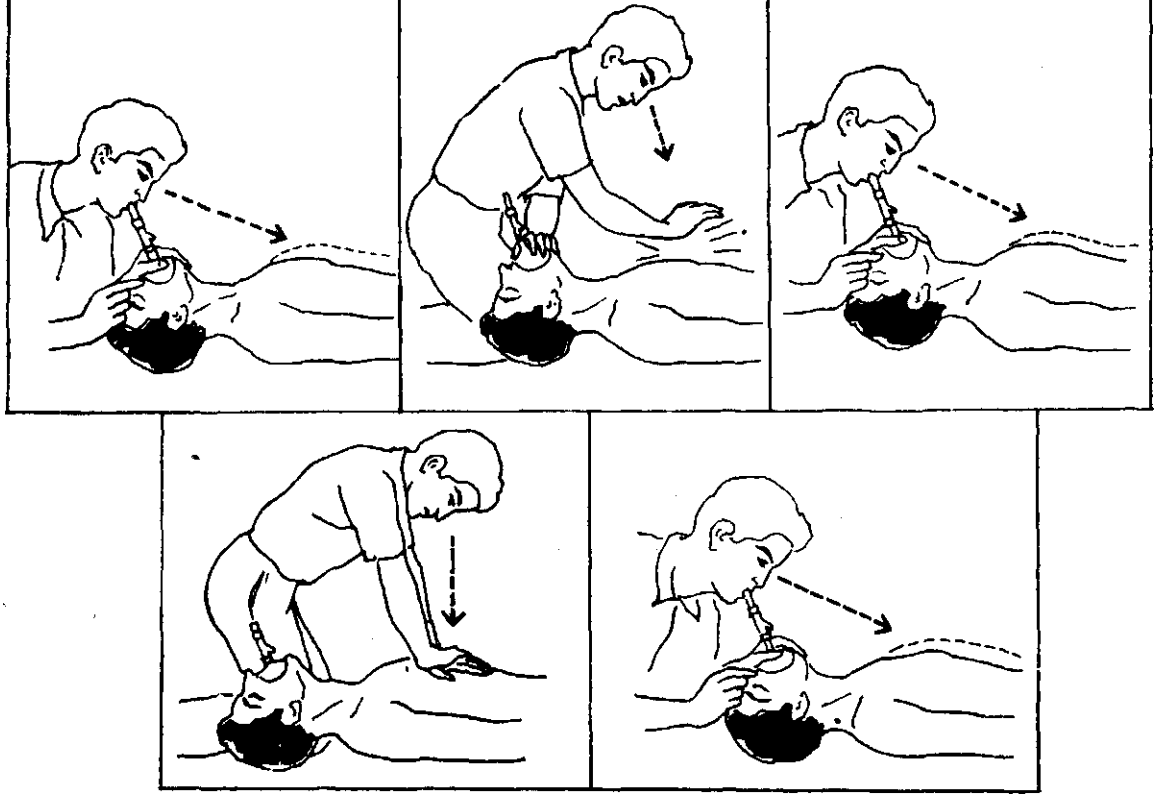
beat. Any interference, any disturbance of this mechanism and the heart beats may stop. This may, and often does, happen when the blood supply to the heart muscle is inadequate. And this inadequacy is usually the result of arteriosclerosis of the coronary arteries, of hardening and narrowing of the arteries bringing blood to the heart muscle. When the heart stops (this often happens during a heart attack) the pulse disappears, the skin becomes cold and clammy, the patient looks ashen grey or blue.

This is where resuscitation should start. There is no time to wait for the doctor. Whoever is there has to do it, or it may be too late.

EXTERNAL CARDIAC MASSAGE

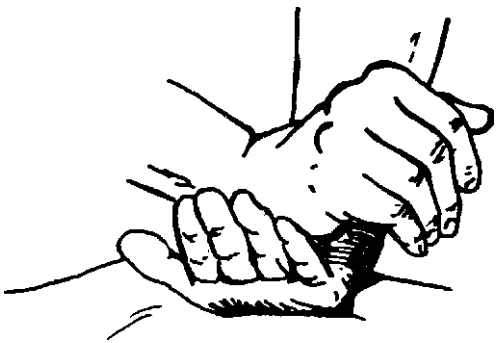
How can resuscitation be done? In the case of artificial respiration, you have to press and release the chest wall to simulate breathing, to enable air to enter the lungs the same as it does in normal breathing. In the same way, in resuscitation of the heart you have to press and release the heart to simulate its normal beating, to keep it going till it is ready to take over on its own. This sounds difficult; actually, it is as easy as artificial respiration. Vigorous thumping of the chest alone may succeed. If this fails, then with the patient on the ground, with the chin pulled up, the resuscitator puts his hands on the patient's chest, one hand above the other, so that the balls of the palms are over the lower end of the sternum or breast bone. Pressure is then applied with both hands, so that the lower end of the breast bone is depressed by about 4 or 5 cm. In a patient whose heart has stopped, the lower end of the breast bone is incidentally quite movable and it is not difficult to depress it. And when it moves down, it presses on the heart and pushes out the blood it contains, it sends the blood coursing through the vessels around the entire body, it maintains life. But this has to be repeated, it has to be done at about the same speed as the normal rate of the heart, i.e. at about 60 times a minute.

This then is cardiac massage. If it is effectively done the pulse comes back, the pressure of the blood inside the arteries



Resuscitation of Heart : Blow air into the lungs and then press down the breastbone to keep up the heartbeat. Continue like this, 4—5 presses on the heart, to every one blow of air. If there are two of you, to do this, it is easier!

registers at about 100 mm mercury. If necessary, it can be kept up for an hour or so. There is a good outside chance



Position of the hands on the breastbone.

that the heart beats will spontaneously resume. A good number of these hearts are too good to die, and once revived can and do function for many years.

At the same time, respiration must be maintained. Air must be pushed into the lungs so that the blood can pick up the oxygen it has to have. The usual way of giving artificial respiration is impossible at the time of cardiac massage. But something else can be cone. Air can be pushed into the nose or mouth of the patient, so that it reaches the lungs and helps to aerate the blood. The simplest way to blow in air is by putting the mouth to the patient's mouth or to his nose. If there is someone else handy, it can be done by him. But if there is no help, you may have to do it yourself, after four squeezes of the heart there should be one good blow of air into the lungs.

This is not easy, but it is astonishing what you can do with practice. And this is the reason why relatives of heart patients are advised to practise cardiac resuscitation. There is no reason why you should not practise it too, you never know when it might come in handy.

It is an emergency measure, a measure which may mean life to someone else. And to give life is to give the greatest gift that you can bestow on anyone.

"Mouth to mouth respiration: This is not easy but it is astonishing what one can do with practice!"

10

Pulmonary Heart Disease

CAUSES

LUNG diseases which lead to involvement of the heart are numerous. Take bronchitis, for instance. Almost everyone has had it at some time. One attack may not lead to involvement of the heart, nor may two. But when these attacks are repeated year after year, often several times a year, then the chances of involvement of the heart are great.

Bronchitis affects people all over the world. In temperate climates, in large towns and cities, there is a good deal of pollution of the atmosphere with smoke, both from factories and from homes where coal fires are used. This smoke nuisance is much greater in the winter months, because more fires are lit when it turns cold. When the temperature drops suddenly, as in winter, water vapour condenses on these particles of smoke. The result is a dense mist known as smog, a combination of smoke and fog.

Inhalation of smog, year after year, plays havoc on the bronchial tubes. The lining of the tubes becomes inflamed, secretion is poured out and bronchitis ensues. When the infection heals, there may be scarring and the tubes and blood-vessels may be just a little narrower than before. Repeated infections will narrow down the bronchial tubes and the blood-vessels still further.

When you breathe in, air enters through the bronchial tubes and passes into the air cells (alveoli) of the lungs, where blood becomes aerated. But while breathing out, when air from the air cells tries to pass back through the bronchial

tubes, it is held up when these tubes are narrowed. The air cells thus become more and more distended by the air which is retained, some of them rupture and there are changes around these cells and blood-vessels. The blood is less and less aerated, for fresh air cannot enter an air cell which is already distended with stale air.

A strain is put on the heart. Each time the blood returns to the heart, it is then imperfectly oxygenated. Therefore, each time the heart beats, it has to pump out more blood, to compensate for the poor quality of its aeration. Moreover, there are changes in the vessels of pulmonary arteries and therefore each beat means more work for the heart and each year the burden becomes greater. Pulmonary heart disease thus becomes established.

Asthma, persisting over the years, has the same effect on the heart. For in asthma, too, the bronchial tubes are narrowed down, at first due to a spasm and later due to the repeated attacks of bronchitis which so often complicate asthma.

Fibrosis of the lung also narrows the tubes. This follows certain diseases, particularly chronic infection. It is also an occupational disease being found particularly in sugar-cane workers, farm labourers, cotton ginners and coal, gold and asbestos miners. In all these occupations, the hazard comes from the vast amount of dust and harmful particles inhaled.

In India, where cowdung is used extensively as a fuel, inhalation of the fumes is held responsible for chronic catarrh, cough and later narrowing of the bronchial tubes. In the warmer, southern parts of India, cooking is done in the open air or with the doors open, so inhalation of the cowdung fumes can be avoided. But in northern India, especially in winter, the stove is kept indoors and there may be no ventilation. This may be the explanation for the frequency of pulmonary heart disease in certain parts of rural India.

Deformities of the bony cage of the chest may also hamper efficient ventilation in the lungs. Frequent attacks of bronchitis and catarrh may again narrow down the bronchial tubes. Such deformities are often seen after rickets, a disease

of the bones in young children due to a deficiency of vitamin D in the diet. The bones are softer than usual and they do not grow straight and strong as they should. This disease is unfortunately only too common in children in India. Their chest walls are consequently left with deformities and bronchitis occurs again and again. Later on, they become victims of pulmonary heart disease.

A malformation of the heart, which has been present from birth, may also lead later to pulmonary heart disease. This is strictly not a case of pulmonary heart disease.

Blood which is normally meant for the right side of the heart should go to the lungs. And blood from the left side of the heart should go into the big artery or aorta and thence to the body. But when there is an opening which allows communication between the right and left side of the heart, blood can go from left to right or the other way round if the pressure is higher in the right ventricle. If it goes from left to right, then more blood is poured into the right side of the heart. From there, it rushes in a torrent to the lungs. The lung vessels have to accommodate greatly increased amounts of blood. At first they adjust themselves to this load. Later, there are changes in pulmonary blood-vessels and this gives rise to pulmonary hypertension, with resultant strain on the right side of the heart. This emphasises the advantages of early correction of defects in the heart by surgery.

A PRIMARY TYPE

An unexplained type of lung disease which affects the heart is known technically as "primary pulmonary hypertension". Starting probably at birth, or perhaps even earlier, it pursues an inexorable course, practically unaffected by treatment. This is, however, a particularly interesting condition. A similar disease called "brisket" occurs also in cattle, at altitudes above 3000 m. and is promptly relieved when the cattle are brought down to 1000 m. That it may be due to lack of oxygen at higher altitudes is probable and this has suggested an analogy for the cause of the disease as found in human beings. Deprived of oxygen, at a critical time,

the baby may develop primary pulmonary hypertension, too. The name of the disease describes it graphically. It is primary because there is no obvious cause for it and pulmonary as it is in the lung. Hypertension (i.e., high blood-pressure) refers to the high pressure in the blood-vessels of the lung. Each time the right side of the heart sends blood to the lungs, it does so against the resistance of this high pressure in the lung vessels. This increases the work of the heart and eventually places a strain on the heart.

INCIDENCE

With so many causes, it is small wonder that pulmonary heart disease accounts for 10% to 25% of all the causes of heart disease.

What does it do to the patient?

Pulmonary heart disease can be very mild or very severe, like almost any other disease. When it is severe, it is very disabling and distressing.

Shortness of breath, which is uncomfortable for normal people even for a few minutes, can be almost constantly present in these patients. At the beginning, shortness of breath may be present only after physical effort, later it becomes continuous. Cough and repeated attacks of bronchitis make life more miserable. To look at, the colour may be blue, especially during the episodes of bronchitis. There may be periods when the patient seems relatively well, in between the attacks of bronchitis Later, these periods become shorter and fewer.

What can be done to prevent this disease?

Much will of course depend on the cause. Many countries now have strict regulations to prevent industrial pollution of atmosphere. Smokeless fuels are now commercially available and their increasing use will cut down the smoke from domestic fires. In mines, ventilation, exhaust fans and humidification of the atmosphere are being enforced so that inhalation of dust is reduced to a minimum. Masks for miners have also helped.

In India, it may be a long time before rickets and cowdung fires can be eliminated.

Antibiotics have proved a boon in treating bronchitis. They are also given, in small regular doses, to check repeated attacks of infections which patients of pulmonary heart disease cannot tolerate.

Where heart failure has already set in, the usual drugs for failure will be needed, such as digitalis, oxygen and the water-eliminating compounds or diuretics.

11

Thromboembolic Pulmonary Vascular Disease

THERE is no common name for pulmonary vascular disorders, although they are not uncommon. Disease or stasis of blood in the veins of the pelvis (lower abdomen) and of the lower extremities may lead to the formation of clots (thrombi) in them. These clots may get detached and travel through the veins to the right side of the heart and thence through the pulmonary arteries to the lungs. A dislodged clot is called an embolus. If the clot is large it may block the main pulmonary artery with a fatal outcome. However, when these emboli are small they may become evident with pain in the chest, coughing up of blood, breathlessness, etc. These attacks are usually not fatal.

When small clots are discharged from the diseased veins of the legs or pelvis from time to time, over months or years, they may block the small branches of the pulmonary artery which takes blood from the heart to the lungs. The process may be so slow and gradual that the patient may not notice anything abnormal till the blocking of small branches of the arteries to the lungs throws an unbearable load on the heart. The heart finally fails.

Women who have swelling of their legs during pregnancy are more prone to develop this complication. Clotting of blood in the veins of legs should be prevented by prophylactic measures. Infections of the legs should be promptly treated. Bed rest should be cut down to a minimum.

Passive and/or active exercises to the legs should be given to all patients kept in bed.

Thromboembolic episodes, though rare, have been reported in women taking the "pill"

12

Heart Failure

THERE are many mysteries about the heart. Some can be understood and explained, others can be understood but not explained. Heart failure is one of them. It is dramatic and baffling, dramatic in the onset of its symptoms, baffling in the rapidity with which it recovers.

Heart failure is a frightening term. But the heart even in failure can limp along and, if treated right, can recover. This is the amazing thing about heart failure: it can and does recover.

Why does the heart fail?

Like anything else, the heart fails when it can no longer cope with the work thrown on it. This happens either when (1) it is damaged or diseased or when (2) it is called upon to work against heavy odds.

A damaged heart is one which always has to work at a disadvantage. The healthy heart has to work hard enough: it has to beat about 72 times a minute, pump out 70 ml. of blood with each beat All in all it works out to an astronomical figure; the amount of work a heart has to do in a life-time would be enough to lift a battleship five metres clear of the sea! A damaged or diseased heart, therefore, has to work much harder, for it has to work at a mechanical disadvantage.

The work load of the heart is invariably increased when there is any rise in the blood pressure. The work is also increased when it has to beat faster. This does not matter if it happens from time to time during the course of the day,

as when going up the stairs. But when the rate is stepped up, day after day, and during the night too, the work may prove too much for the heart.

When does this happen? In severe anaemia, for instance, when the number of red cells in the blood is very low, the oxygen carrying power of the blood is also low. For it is the pigment haemoglobin in the red cells which has to transport the oxygen. The body, however, must have its oxygen. If the blood cannot bring enough, the circulation is speeded up, the heart rate shoots up. Then there are certain disorders of the thyroid the gland that sits across the wind-pipe in the front of the neck. The thyroid secretes a hormone which controls the activity of all the tissues (the metabolic rate) of the body. If the right amount is made, all goes smoothly. But if large amounts of hormone are poured into the circulation, all the body processes become revved up, the metabolic rate soars. The heart rate also soars.

Heart failure then may occur because the heart itself is sick or because the work expected of it proves too much for it.

SIGNS OF FAILURE

To the patient, the most distressing feature is breathlessness. This may be mild, it may not even be noticed if the patient is resting. But when he exerts himself, it becomes obvious. Later, even the ordinary activities of daily living, such as bathing, shaving, etc., may leave him completely breathless. Still later, he finds that he cannot even lie down flat in bed without getting out of breath, and he may have to sit up all night. This leaves him quite helpless, most distressed. You can notice this breathlessness even in small babies, who are in failure, after a fit of crying or sucking milk. Crying and sucking impose extra work on the baby's heart and they pant for breath. Feeding them then becomes difficult, sometimes impossible.

The swelling of the body often starts insidiously. First the legs feel heavy, then the abdomen begins to swell. The patient himself notices that he is not passing as much urine as he usually does; the weight increases. Sleeplessness, parti-

"The sheep come home every night, ... but still sleep is far away."

cularly if it occurs night after night, can lower the morale completely. A sense of tiredness, which many complain of bitterly, may plague the patient. Loss of appetite and lack of concentration are comparatively trivial symptoms compared with the others, but they make the day feel as long as a year to the patient. Eating, sleeping and thinking make up a good deal of the day, and if these cannot be enjoyed, life becomes intolerable.

MANAGEMENT OF FAILURE

First of all, complete rest in bed is a must. The heart is in failure and the heart must have time to recuperate. Cheat the heart of its due rest and you cheat yourself of many years of life. When the heart recovers, you can get back to almost all your normal activities, provided you do so gradually.

A proper diet has to be followed, during the period of rest and after it. During the acute stage, it is no great hardship to be on a diet, for there is no appetite anyway. Liquids only are preferred at this time. Later, solids are allowed, but the golden rule is to eat less than you think you need. The weight has to be watched, too. The meals themselves should be small, stuffing the stomach to distension embarrasses the action of the heart, for then the stomach presses upwards on the heart. Green vegetables, legumes (lentils and dal), lean meat, fish and chicken are allowed, so are rice, chapatti, skimmed milk and buttermilk. Salt is to be strictly avoided, for the kidneys in heart failure have the greatest difficulty in getting rid of salt. Keep salt in the body and you keep water, too; the two go together and the result is water-logging of the whole body.

DRUG THERAPY

Digitalis: Generally speaking, there are two ways of tackling failure. There are, for instance, the drugs which act directly on the heart like digitalis, and those which act indirectly.

Though many drugs with fancy chemical names have come from research laboratories, not one of them possesses the inimitable action of an extract of the purple foxglove, or to give it its proper name, digitalis purpurea. This plant grows wild in England and other places, it has a spike of purple flowers which are bell-shaped. It was William Withering, a country physician, who discovered digitalis.

William Withering (1741-1799) lived in an exciting era. He saw two revolutions—the French and the American. He qualified as a doctor from the University of Edinburgh and went to Stafford, in 1767, to practise medicine. Stafford in those days was a pleasant small country town. Withering was young and new and did not have much of a practice. But that did not daunt him, for he took up mineralogy and chemistry and secured an F.R.S. for research in these subjects. He took up botany, his interest in this subject stemmed from the fact that he often collected flowers for his girl friend, the

lovely Helena Cook. Things gradually began to look up for William Withering; his practice grew, and he married Helena in 1772. Then by chance, he came to know of an old country woman's remedy, a decoction of herbs which the woman

"Say it with flowers; the surest way to a woman's heart."

claimed could cure dropsy. Mother Hutton claimed that her decoction had cured the Dean of Brasenose College, Oxford,

after all physicians had given him up.

With Withering's knowledge of plants and herbs, it was not long before he discovered that the only active ingredient in Mother Hutton's decoction must be the purple foxglove. He promptly proceeded to experiment with the foxglove himself. First, he made a decoction of the leaves, then an infusion and finally he used the powdered leaf. After satisfying himself that they all worked in dropsy due to heart failure, he wrote a monograph on the foxglove and published it in 1785. He took ten years to convince himself that it was good!

How did the foxglove or digitalis work? In taste it was intensely bitter, so much so that even cattle avoided eating it while grazing in the meadows, where it grew wild. Its action was sometimes distressing, especially when too much of it was given to a patient, for it produced violent vomiting and diarrhoea. But Withering refused to accept this explanation. He had noticed that the digitalis seemed to have a beneficial effect on the heart itself; it slowed up the rate. It also increased the flow of urine in patients with failure. This then, Withering realised, was the real reason digitalis was good for failure.

Anyone could have discovered digitalis, for many knew about this country remedy. But it took Withering long years of experiment to find out its dose, its mode of action and its limitations. And in those days there were no research laboratories to help him. Today we know that digitalis has more actions than Withering suspected; it is in fact even more wonderful than Withering imagined. But this does not in any measure detract from the value of Withering's work. Every book about the history of cardiology mentions Withering and digitalis as one of the landmarks of therapy.

Oxygen is a gas, so no one thinks of it as a "drug", but it is quite an essential part of the treatment of failure. It gives the patients that little extra oxygen in the air they breathe, and that little extra makes their breathing so much easier. Unfortunately it has a demoralising effect on the relatives who always assume the worst when they see the oxygen tube stuck

through the nose. In fact, the worst may be a long way off!

The **diuretics** increase the secretion of urine. They act on the kidneys, in one way or another, but the end result of their action is the same : salt and water pass out, the swelling of the body subsides, the weight comes down. This sounds easy, but in fact they are rather tricky to use. Generally speaking, they work by compelling the kidneys to excrete large amounts of salt in the urine; together with the salt out goes the water. But diuretics are chemicals without any selective discrimination; they cannot distinguish between different kinds of "salt", bad ones like salts of sodium and useful ones like salts of potassium. The diuretic pushes out both of them and so a potassium deficiency may ensue, which is not good for the heart. To avoid this, potassium is often given with the diuretic.

Most people think that a patient with failure is a patient "for whom the bell tolls". This is unduly pessimistic and unjustified.

In the past two decades tremendous advances have been made in the management of the failing heart. Today, in most cases, a failing heart can and does recover.

FOR THE PATIENT IN HEART FAILURE

(Congestive Cardiac Failure)

Rest :

For the first few days, absolute rest in bed is essenntial. O_2 (Oxygen) will help considerably. Then, as the condition improves, activities may be gradually increased.

Diet :

In the acute stage, the diet may preferably be liquid, e. g. coconut water, coffee, fruit, juice, milk, tea, water and fruit.

(Or if the patient prefers, milk alone upto three-quarters of a litre a day, the Karell diet). Later, solid foods may be allowed, provided they are low in calories (total 1,200 a day), low in proteins and low in bulk. Vitamin supplements are indicated. Salt (sodium) including rock-salt, should be strictly avoided. None should be added during cooking or before eating. Salted or preserved foods, biscuits, chutney, pickle and papad all contain a large amount of salt. Salt substitutes may be used, provided they do not contain sodium

Fluids :

There is no restriction of water.

Keep a 24 hour record of the intake of fluid and the amount of urine passed.

Smoking :

Tobacco in any form should be avoided.

Tea and Coffee :

May be taken in moderation.

Bowels :

The bowels have to be kept open and there should be no hesitation in using mild laxatives, glycerine syringe, glycerine suppositories, glycerine and olive oil enemas.

At all times avoid straining to pass a stool.

Sleep :

Be sure to have enough sleep, if necessary with the help of sedatives and tranquillisers.

Precautions :

It is helpful, if possible, to keep a daily record of the weight. Gain in weight may be due to retention of fluid.

If on digitalis therapy, inform your doctor immediately if you have loss of appetite, nausea or irregular pulse.

Activity :

As improvement occurs, activities may be gradually increased, always stopping short of breathlessness or fatigue.

After recovery :

The diet should preferably always be salt-free.

Smoking is not advisable.

The bowels have to be kept open regularly.

The weight has to be reduced to an optimum level and kept there.

All activity, physical and mental, should stop short of fatigue or shortness of breath. This may entail a change in the occupation.

Sufficient rest during the day and sleep at night should be ensured. Emotional strain and anxiety are best avoided.

Infections, particularly those of the chest, may lead to a relapse and should be promptly treated with antibiotics.

Medicines have to be continued, even though they become tiresome.

A sudden increase in weight may be the first warning that all is not well. It is a good idea to keep a regular weekly record of the weight.

Management of Chronic Heart Failure :

Weight—twice a week (gain in weight should be reported to your doctor).

Low salt diet.

Diet should be easily digestible.

Adequate sleep.

13

Psychosomatic Heart Disease (Neurocirculatory Asthenia)

Is It Your Heart Or Your Nerves?

THERE has not been a man who at some time or other has not thought that his heart was bad. It is quite possible that his heart was in fact bad, but it is far more likely that the symptoms he has are due to another cause altogether, in other words, to his "nerves". This type of "heart disease" is a clear entity in itself; no matter how good the heart may be, the sufferer himself feels the symptoms and cannot understand why they cannot be due to the heart. The condition has been designated neurocirculatory asthenia, "neuro" because it is nervous in origin, "circulatory" because the symptoms are referred to the circulatory system, "asthenia" means weakness and this is an important symptom.

Neurocirculatory asthenia or psychosomatic disorders can best be understood when we realise that anxiety causes tension and, if it is not expressed in words or deeds, the pent up emotions express themselves as symptoms of disturbances of different body functions; it may be the heart, it may be the digestive system or it may be the nerves.

THE SYMPTOMS

The heart has long been regarded as the seat of emotion. No wonder then that anxiety and tension often have cardiovascular manifestations. The important manifestations are palpitation, breathlessness and pain in the region of the heart, weakness, fatigue, etc. Any of these symptoms alone or in

combination may be present and the degree of severity may vary considerably. It may be just a discomfort or the symptoms may be so overwhelming that it may lead to complete invalidism.

Palpitation is the commonest symptom and is responsible for the perpetuation of the vicious circle of anxiety and cardiovascular symptoms. Tachycardia or irregular heart action are the commonest associated manifestations.

Shortness of breath: The respiration is shallow, rapid, irregular and interrupted by deep sighs. These attacks of breathlessness may come on at any time, after exertion or suddenly during the night or even at rest. The patient usually describes his symptoms as an inability to get an adequate supply of air into his lungs and has to take a deep breath from time to time.

Pain in the region of the heart (precordial pain): This is usually present on the left side of the chest below the nipple or the breast. It is usually a dull ache or a sharp stab or like a pin prick. It may occur at any time and is usually related to exertion. The following case serves to illustrate this condition: A young lady of 30 years started complaining of severe pain in the region of the heart. The pain was stabbing in character as if a dagger had been plunged into her chest. She and her relations were fully convinced that she was getting pain due to heart disease. These attacks would come on from time to time, would persist for a few hours and disappear. All the investigations, including ECG, were normal. Her history revealed that she got this pain for the first time while she was darning the jacket of her husband in which she found a love letter from his girl friend in one pocket. Ever since, whenever her husband wore that jacket she would get severe pain in her chest. Psychological treatment and reassurance helped her realise that this pain was not due to heart disease.

Anxiety is an important symptom and is usually associated with sweating which is confined to the armpits and palms. Giddiness, headache, bad dreams, depression and restlessness

with tension are often present. Other features like coarse, irregular and inconstant tremors of the fingers, shakiness of voice and limbs may also be present.

Tiredness (fatigue and weakness): There may be spells of fainting and these may occur at any place but commonly in a hot and crowded room, a cinema or a lecture hall and specially in a place where there is standing room only. These symptoms have also been found in young conscripts at the war front, exposed to shell fire for the first time in their lives.

The circumstances may differ in individual cases, but the general pattern is the same: the lanky nervous youth, the heat, the erect posture, the accidental sight of something terrifying or disgusting, sudden unaccustomed physical or mental stress.

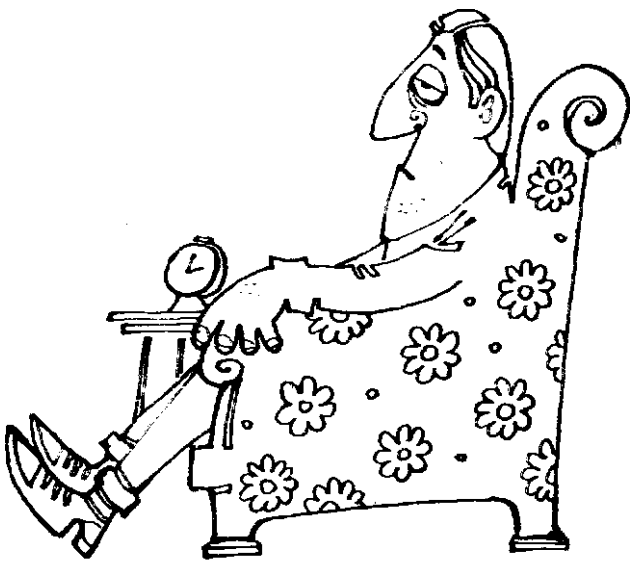
What really alarms the affected more than anything else is the heart, for it feels as if it is knocking against the ribs, trying to escape from the confines of the chest. There may also be pain, under the left nipple or breast which is the place where one usually feels the "pricking" or "stabbing".

How can you be sure that it is not the heart?

Here lies the real snag, for the symptoms that the patient describes can so easily be attributed to the heart, not only by the patient himself but also by those who happen to see him in an attack.

There are, however, some fine points of difference. The pain he feels, for instance, is in the chest, but it is not in the position where it would be if it were really due to the heart. For a real heart pain is usually in the centre of the chest, and not on the left side, under the nipple. The character of the pain is also different, a real heart pain is not "pricking" or "stabbing", it is more of a "constriction". Besides, the feeling of faintness is usually not associated with real heart disease. Dizziness, too, is far more likely to be due to nervousness than to a heart disease.

But more characteristic than anything else is the way the attack starts. No heart attack starts in the same way. The



"To beat or not to beat that is the question."

erect posture, the heat, the fright or dismay or disgust before the onset are all far more likely to produce a "nervous" attack.

Treatment of Neurocirculatory Asthenia.

It is quite natural to be taken aback by these peculiar symptoms, but there is no need to panic. Once the doctor has diagnosed the condition—here it may be added that he may require an electrocardiogram or a few other investigations to do so—the treatment may commence.

Reassurance is, of course, essential. But it must come not only from the doctor but also the patient's relatives. The patient may see his doctor for half an hour and be reassured, but if he then goes home and lives for the rest of the day with relatives who constantly doubt the doctor's word, then all the good will be undone. The patient himself will feel considerably

more confident if he avoids the circumstances which he knows bring on the attacks. If the attacks are avoided, if there is a period of freedom from fear, the patient will realise that it is the external circumstances and the way his nerves react to them that produce the attacks.

The heart will be exonerated from all blame and the patient will be able to live again without the constant nagging doubt that "it may be the heart". However, these symptoms may manifest themselves again when a stress situation arises.

Certain physical and psychophysical exercises are also of great value.

14

Diabetes

People in normal health are able to utilise the starch and sugar (carbohydrates) they eat. This is possible with the help of insulin, a hormone produced by the pancreas (a gland which lies across the upper part of the abdomen) and secreted into the blood.

In diabetes, there is not enough insulin to burn up the carbohydrates eaten. So the level of sugar in the blood rises and sugar appears in the urine.

Diabetics, therefore, have to reduce the carbohydrate intake. They may also require injections of insulin or drugs by mouth. Some dieting, though irksome, is also essential.

In most cases, the pancreas may hot have completely failed. It is still able to make a little insulin. If it is not overburdened by the carbohydrate intake, it may be able to recuperate.

Failure to control the sugar in the blood also upsets the proper burning up of fat, with the result that excess fat is deposited in the walls of arteries and gives rise to heart disease, strokes, kidney failure and blindness.

High blood sugar may lead to unconsciousness and also to infection, carbuncle, gangrene, etc., as germs thrive in the sugar-laden environment in which they find themselves.

Management

FOR THE DIABETIC

Eat as much as you like of :

Chicken, fish, lean meat.

Artichoke globe, ashgourd (petha), asparagus, bittergourd (karela), brinjal (baingan), cabbage (patta gobhi), calabash cucumber (lauki), celery, cucumber (kakri), drumstick (saijan), french beans (bakla), ghosala, karonda, knol-khol (kohi rabi), koval fruit (kundree), lettuce (salad), mogra, mushroom (kukur-mutta), radish (mooli), ridge gourd (torai), snake gourd (padwal), spinach (palak), tinda, vegetable marrow (Safedh kaddu), water melon (tarbooj), white melon (jam, kharbooj, sakarteti).

(1 to 5 per cent carbohydrate).

Non sweetened drinks, soda-water, water, tea or coffee sweetened with a sugar substitute and with milk from the daily ration, bouillon, bovril, clear soup, dal water marmite, oxo, whey.

Eat in moderation :

Heart, kidney, liver, roe (rohu), salmon, sardine, tongue.

Carrot (gajar), cauliflower (phool gobhi), colocasia (banda), ladyfingers (bhendi), pumpkin (kaddu), sword beans (abaichi sheng), tomato, turnip, betel leaves (pan), capsicums (green chillies), coconut fresh (water and tender kernel), coriander leaves (dhania), mint (paudina), apple (sev) sweetened and without sugar, fig, grape fruit, guava (amrud), jamun, lemon, orange papaya (papita), pineapple (annanas), pomeloe (chakotra), strawberry, sweet lime (mosambi).

(5 to 10 per cent carbohydrate).

Curry leaves (gandhala), ginger fresh (adrak).

(10 to 20 per cent carbohydrate).

Areca nut (sopari), cardamom (elaychi), cloves (laung), coriander seed (dhania), cumin seed (zira), fenugreek seed (methi), garlic (lehsan), pepper green and dry (kalimircha), tamarind pulp (imli), turmeric (haldi).

(all over 20 per cent carbohydrate).

Salt, Mayonaise (made with kardi or til oil and sugar substitute, mustard, pepper and vinegar).

You may have everyday :

Fresh milk, after removing cream, for non-vegetarians, quarter litre a day and for vegetarians, half litre a day, butter-milk (after removing butter) and curd (dahi) from daily ration of milk, cottage cheese (panir).

Non-Vegetarians :

2 slices bread or 2 chapattis (wheat or bajra) or 2 khakhra.

Vegetarians :

4 slices bread or 4 chapattis (wheat or bajra) or 4 khakhra. 30 gms. of dhal (channa, mung, tur, udud).

Non-Vegetarians, Vegetarians :

Saccharin, sodium/Calcium cyclamate or Dulcin instead of sugar.

Avoid :

Butter, fat, ghee, margarine, vanaspati, vegetable oil (only a very small amount of kardi or til oil may be used in cooking, condensed milk, cream or malai, icecream, pudding, sweets (mithai), yellow of egg, chocolate cocoa, sugarcane juice, sweetened drinks, toddy (sweet), glucose, honey, jaggery, jam, jelly, marmalade, muramba, sugar in any form, syrup (if jam and jelly are desired, there are special sugar-free preparations which can be taken in moderation by diabetics), sweet chutney, sweet pickle.

Bhakra, biscuit, cake, idli, nan, papad, pharatha, phulka, puri, rusk, toast (if desired, one of the special diabetic biscuits, bread or rusks may be taken in moderation).

Barley (jau), cereals, macaroni, maize dry (makai), millet (bajra, jaur), oatmeal (jai), ragi, (munda), rice, sago, tapioca, vermicelli (siwain), wheat.

(all over 60 per cent carbohydrate) (except what is allowed each day).

Beans (sem, val), gram (channa, mung), lentils (dhal), dried and tinned fruits.

(all over 50 per cent carbohydrate).

Potato (alu), sweet corn fresh (makai), sweet potato (sakar kand), yam (ratalu), banana, custard apple (sitaphal), sapotas (chickoo), all other nuts except mentioned in 10 to 20 per cent carbohydrate category.

(all over 20 per cent carbohydrate).

Beetroot (chequander), cluster beans (guar ki phalli), coconut mature (kernel and "milk" there from), parsley, peas (matar).

Apricot (khumani), bor, cherry, grape (angoor), Indian prune (alubokhara), jack fruit (kathal), mango, litchis, peach, pear, plum, pomegranate (anar), raspberry.

Almond (badam), charoli seed ground nut (moongphalli), pistachio (pista), walnut (akhrot).

(all 10 to 20 per cent carbohydrate).

Alcohol :

Brandy, gin, spirits, toddy (fermented) and whisky are permitted in moderation if you are accustomed to them.

Ale, beer, liqueurs, wine and stout are best avoided

1 ml. of alcohol gives 7 calories.
1 peg (50 ml.) of whisky gives 150 calories.
1 glass (250 ml.) of beer gives about 150 calories.

Alcohol also increases appetite and this may lead to an undesirable increase in weight.

Smoking :

Tobacco in general should be avoided but when this is not possible, it may be allowed in moderation if there are no complications.

However, it is forbidden to those with complications, e. g. with heart disease or cramps in the legs.

Work and Activity :

There is no reason why diabetics should not lead a normal active life.

Golf, swimming, walking or any other exercise, taken daily and in moderation, is beneficial.

Exercise helps to burn up the carbohydrate which is eaten, but this does not mean that you should eat more because you take exercise. Exercise also helps to reduce the dose of anti diabetic drugs.

Weight :

Keep your weight at the level optimum for your height and age and preferably a little below this level.

Foot Care :

Be particularly careful of your feet. Shoes that pinch are best discarded.

Cut your toenails straight across. If you develop an ingrowing toenail, the doctor is the best person to remove it, not the barber!

Avoid hot water bottles on the feet, in fact avoid anything that is likely to irritate or burn your skin.

Danger Signals :

Suspect coma due to a high blood sugar if you have pain in the abdomen, drowsiness, lassitude. This may occur after omitting insulin or drugs or after dietary indiscretion.

If you have irritability, blurred vision, thick speech, unsteadiness of hands and legs, etc., it means the blood sugar is low.

This may occur if the usual dose of insulin or drugs is taken and the meal is delayed or skipped. Sucking a lump of sugar or drinking a glass of orange juice will speedily put matters right. The diabetic should always carry a couple of lumps of sugar with him.

A low blood sugar is particularly dangerous as it may precipitate a heart attack.

Gangrene starts as a dark, blue spot on the toes or feat. This spreads up the legs.

All minor infections are potentially dangerous, for they may result in voilent uncontrollable illnesses.

A sweet smell in the mouth or urine, rather fruity in type, is due to acetone and means usually that you are not having enough insulin and may go into coma.

Consult your doctor at once if you think you have any of these complications.

Urine Examination :

Daily examination of the urine for sugar, first thing in the morning and two hours after a meal, will show if your diet and treatment are correct. But remember that in some people sugar in the urine may be absent even when the blood sugar is high.

Periodic checks on the blood sugar are therefore advisible, fasting and 3 hours after meal (anti-diabetic treatment should not be omitted on the day of the blood sugar examination).

Materials required and Method of Urine Examination :

(1) Conical urine glass, for collecting urine.
(2) Test tubes with wooden rack.
(3) Wooden test tube holder, if desired.
(4) Spirit lamp.
(5) Benedict's Soluton, qualitative.

Take 5 ml. of Benedict's reagent and add 8 drops of urine Boil together vigorously over a spirit lamp for 2 minutes. Make sure there are no drops of water on the outside of the test tube and keep moving the test tube while it is heated, or the glass will break. Allow to cool. Read the results as follows:

	Solution	Precipitate	Sugar in urine
(1)	Blue	None	Nil
(2)	Green	Slight yellow	Under 1%
(3)	Green	Darker yellow	1 to 2%
(4)	Colourless	Brick red	Over 2%

Gluco strips or sugar tapes may be used if desired for estimating sugar in urine.

15

Obesity And Heart

EXTRA weight of fat on your body means extra work for your heart. Twenty kilos (half a maund) overweight means that you are carrying a trunk-load of half a maund on your shoulders and that the heart has to work for you as well as for the extra weight of half a maund on your shoulders.

With 10% overweight, the mortality rate is increased by 20 per cent, and with more than 25 per cent overweight by 75 per cent.

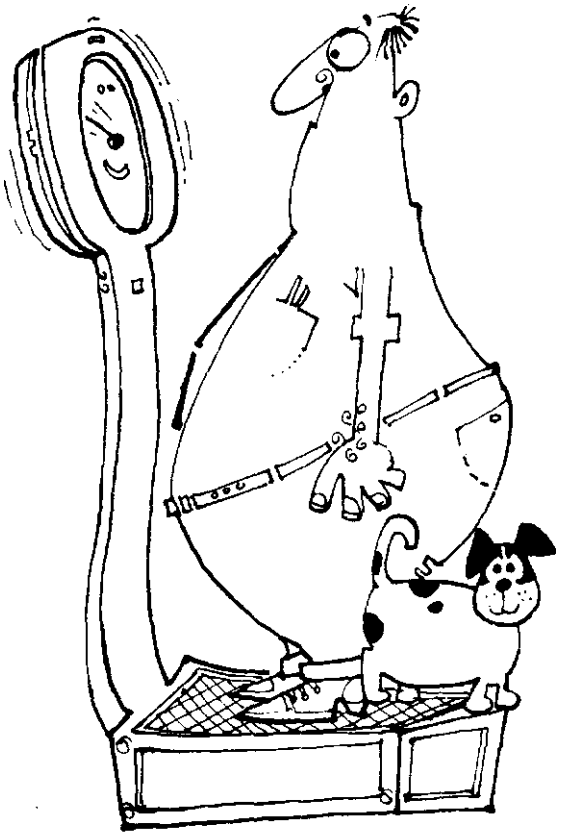
Heart disease (Coronary Artery disease) also occurs more frequently in obese patients, the rate being 42% higher in obese men and 75% higher in obese women than in the non-obese population. Excess of fat leads to other diseases too. There are no shortcuts to reducing weight. Knocking off weight is hard, but it can be done provided you have the determination.

People who say that "they don't eat a thing all day and still cannot lose weight" are not speaking the truth.

Others blame their "glands" or "hormones". No doubt there are certain diseases of the ductless glands or the hormones which are associated with obesity. But these are very rare.

A fortunate few do exist who can eat far more than others and who do not seem to change year after year. But most of us do not belong to that category. So we may as well resign ourselves to dieting.

Without dieting, there is no possibility whatever of reducing weight. Exercise alone, however rigorous, will not



"Blast my glands and hormones!"

achieve loss of weight. It takes a brisk one-mile walk to work off the effects of a single thin slice of bread.

Besides, exercise only has the effect of makng one more hungry.

For some reason, dieting goes against human nature. Most people prefer a "tablet" or "injection" to a diet. Loss of weight often entails not only eating less but eating a diffe-

rent type of food. Obviously if the type of food you have been used to has put on the excess poundage, then it must be all wrong and needs radical alteration. Then, once you have started losing weight, it may be possible for you to become used to the taste of the low caloric foods, perhaps even to like them and to fill your stomach with them. There are no easy ways to lose weight.

A weight reducing diet is given below. This diet, if it is followed implicitly, should help one lose weight. The weight loss may not be very obvious in the first week, but one should not be discouraged. The first loss of weight is always the most difficult, once it starts it goes down very encouragingly. The diet must be rigidly followed, there must be no cheating, either in the type of food eaten or in the way the food is cooked.

Just one hint, though, before you embark on the road to "slimness". Have a reason for slimming, it does not really matter how silly it is, but a reason always helps. It should be a reason that convinces you of the need to lose weight. It may be because you want to live longer, to be admired for your figure or it may only be to enable you to get into your clothes again. And don't be discouraged, the first week of dieting is always the toughest. After that it becomes easier and easier, until you can really do it without tears.

GENERAL PRINCIPLES

Weigh yourself before you embark on your plan to reduce your weight. Continue to weigh yourself twice a week, in the same clothes, on the same scale and at the same time of the day. A weight record should be maintained.

Use sodium cyclamate (not more than 500 mg./day). ('Sodirin' or 'Sucaryl') or 'Saccharin' or any other noncaloric sweetening agent instead of sugar.

While on a diet, take a multivitamin tablet daily.

Reducing the intake of common salt (including rock-salt) will help in weight reduction.

WEIGHT REDUCING DIET

You may have liberal helpings of :

Chicken, fish, meat (not fat), white of egg.

Amaranth stem (cholai ki dandi or rajgira), ash gourd (petha or kohala), asparagus, bitter gourd (karela or karle), brinjal (baingan or vange), cabbage (band gobee or kobi), cauliflower (gobhi or phool kobi), celery (ajwan), colocasia stem (banda), cucumber (kakari or khire), drumstick pulp (saijan or shevuga sheng), fenugreek (methi sag), French beans (bakla or pharasbee), ghosala, giant chillies (paprika), kovai fruit (kundree or tondale), knol khol (kohl rabi), lettuce (salad), mogra red or green, papaya green, parwar (palwal), pumpkin (kaddu or lal bhopla), radish (muli), radish tops (muli sag), ridge gourd (torai or dodka), snake gourd (chichinda or pudwal), spinach (palak), sorrel (khatti palak or ambat chuka), tinda, tomato green (vilayati baingan), turnip, vegetable marrow (safedh kaddu or pandhara bhopla), watercress.

Sakkarteti (ker), water melon (tarbuz or kalingud), white melon (kharbuz).

Mustard (rai or mohori), pepper (kalimircha or mirel).

Buttermilk, butter removed (lassi or tak), coffee or tea with sweetening agent and with milk from daily ration, non-sweetened drinks, soda water, water, whey.

Bouillon, broth, clear soup, dal water.

You are allowed in moderate amounts :

Heart, kidney, liver (kaleja or kaleej).

Amaranth leaf (lal sag), bamboo shoots (bans or kalki pan), beetroot (chequander or beet), broad beans fresh (sem), Brussels sprouts (choke gobee), carrot (gajar), chowli, cluster beans (gaur ki phalli or govari), colocasia green leaves (alu) coriander leaves (dhania or kothimbir), field beans (sem or papdi), ladies' fingers (bhendi or bhindi), mango green (keri or amba), mint (paudina or pudeena), mushrooms, nellikai

(amla or anvla), onion (pyaz or kanda), shepu, sowa sag, sword beans (bara sem or abaichi sheng), tomato ripe (vilayati baingan).

Apple (desi sev, kulu sev), apricots fresh (khurmani), blackberry, cape gooseberry (rashbhari or tipari), cashew apple (kaju phal), figs fresh (anjeer), grape fruit (vilayati chakatra), guava (amrud or peru), Indian prune (allubokhara), jamum big, lemon (limbu), lime sweet (musammi), mulberry (toont hara), orange (narangi or santre), palmyra tender (tar or shindi), papaya ripe (papita or popai), peaches (arhu), pears, pineapple (ananas), plums, pomegranate (anar or dalimb), pomeloe (chakotra or papnas), raspberry (rushbhary), strawberry (straberry).

Vinegar, Worcester sauce, Bovril, Marmite, Oxo.

Fresh milk without cream or milk made with skimmed milk powder : 1/4 litre a day.

Curd (dahi) from daily milk ration.

AVOID

Butter (makhan), fat, ghee (toop), hydrogenated oil (vanaspati), margarine, vegetable oil (only a very small amount of til or kardi oil may be used in cooking).

All fried foods.

Cheese, condensed milk, cream (malai), icecream, pudding.

Alcohol, chocolate, cocoa, malted milk drinks, sweetened drinks.

Glucose, honey (madh), jaggery (gur or gul), jam, sugar, syrup. Gravy, mayonaise, sweet pickle or sweet chutney, thick soup, cake, pappad, paratha, puri,

Barley, corn (or wheat) flakes, gram (chana), macaroni, lentil (masur), millet (bajra, etc.), porridge, rice, sago (sabudana).

Fatty meat (bacon, ham, pork), oily fish (herring, mackerel, salmon, sardine, tuna).

Banana (kela or kele), bor (ber), custard apple (sitaphal), grapes (angur or draksha), jackfruit (kathal or phanas), mango (keri or amba), sapotas (chiku).

Beans (sem), chavli, coconut (nariyal or naral), peas (mattar or vatana), potato (alu or batata), sweet potato (shakar kand or ratalu), sweet corn (bhutta or makkai), yam (zamin kand or suran).

Dried fruit, tinned fruit, nuts.

Alcohol :

Alcohol increases appetite and one is likely to eat more.

1 gm. of alcohol gives 7.1 calories.

One peg (50 cc.) of whisky is about 150 calories and a glass of beer (250 cc.) about 150 calories. Alcohol should therefore, be avoided.

Calories :

1 gm. of protein gives 4.1 calories; fat = 9.3, carbohydrate = 4.1.

Caloric requirement of a normal adult (wt. 70 kg.) is about 1,800 to 2,500. For weight reduction calories will have to be restricted to about 1,000-1,200. If you do not lose weight on this diet, it should be reduced to about 800 calories.

Protein content of the diet should be about 1 gm./kg. fats and carbohydrates to get the desired caloric level.

Exercise :

Moderate exercise is excellent, but with exercise alone, without reducing calories, weight will not come down.

You may have during the whole day :

Four thin slices of bread	... ...	15 gm. each
OR four chapattis	... ...	15 gm. each
OR four khakra	... ...	15 gm. each
OR one wati rice	... ...	40 gm. uncooked
Dal (chana, mug, tur, udud)	... ...	30 gm. a day

Salt (neemak, meeth) in minimal quantities.

The following are :

(A) **High in Sodium :** (Restrict for high BP and congestive cardiac failure).

White of egg, lal sag, knol-kohl, spinach, vinegar, Worcester sauce, Bovril, Oxo, Marmite, heart, kidney, liver.

(B) **High in Cholesterol :** (Restrict for coronary heart disease). Heart, kidney, liver, yok of egg, butter, fat, ghee, vanaspati, cheese, condensed milk, cream, icecream, pudding.

SUGGESTIONS FOR THE DAY

Morning Tea :

Tea or coffee with ('Sodirin' or 'Sucaryl) or 'Saccharin' and milk from the daily ration.

Breakfast :

Half grapefruit or one orange or one apple.
One thin slice of bread or one small chappati or one khakra
Tea or coffee as above.

Lunch :

Clear soup. Vegetable soup from permitted vegetables.
Chicken, fish or meat (boiled or grilled).
Or dal from ration.
Two permitted vegetables (boiled and flavoured with salt, pepper and other seasonings as allowed). These may be taken in quantities sufficient to satisfy the appetite.
Buttermilk or curds.
One thin slice of bread or one small chapatti.
Tea or coffee as above.

Afternoon Tea :

Same as morning Tea.

Dinner :

Same as Lunch.

16

Stress And The Heart

Lubb-dupp pump Lubb-dupp pump Lubb-dupp pump

THAT'S the way the heart goes, on and on. It keeps up a steady rate of about 72 beats a minute in a grown-up, about 100 to 120 in a child. Each part of the body needs oxygen to live. It is the heart's job to see to it that blood carrying oxygen is sent to it.

At certain times the body may require more oxygen, at others it can make do with less. During physical effort or exertion the cry for oxygen goes up. And to reach this oxygen to the body tissues, the heart has to pump out more blood.

How does the heart adjust itself to these varying demands for oxygen? It is a pump, and like any other pump, it can pump out more blood with each beat, and it can beat more times a minute. Suppose the usual amount pumped out with each beat at rest is 5-6 litres a minute. Exercise may step it up to 35 or even 45 litres a minute. The rate is also stepped up, the sedate 72 a minute speeds up to 150 or even 180 minute. This is not all, other adjustments are also made. The blood flow is redistributed by adjustments in the blood vessels, so that oxygen may be delivered to the parts which need it most. During rest, the brain, heart, liver and kidneys receive 65% to 70% of the blood flow. But during effort, they get only 10% to 20% — the lion's share goes to the muscles. These demands of the body are constantly made on the heart and the normal heart readily complies. Heavy demands,

indeed. They are even heavier in the case of the professional athlete. But a healthy heart can take it. It can adapt itself to the extra pumping load.

THE HEART AND ATHLETICS

The athlete's heart learns to meet the bigger demands for oxygen. Just as the muscles of the arms and legs improve in efficiency with exercise, so do the muscles of the heart. Each tiny muscle fibre of the heart becomes larger and stronger. The heart pumps out more blood when required, and it does this without undue strain or effort. The untrained person, during exercise, may have heart speeds of 120-150 beats a minute, and may pant excessively. The trained athlete, on the other hand, may take the same amount of exertion with a slight quickening of the pulse, perhaps 80-100 beats a minute and no panting.

From time to time one comes across stories and reports of athletes dropping dead during exertion. These people, however, have usually had some heart disease which has not been diagnosed during life, but there is no reason to presume

"Keep it up, grandpa! We'll catch up with you soon."

that the disease was the direct result of the exercise itself. In fact, generally, when athletes have been killed accidentally, their hearts have been found to be completely normal.

People have argued for decades about whether the athlete survives the normal span of life, or whether his life is shortened by the extra demands constantly made on it. There is yet no evidence that it is. On the contrary, there is a good deal of evidence that the athlete has a greater heart reserve. There is also evidence that the athletic training has conditioned his body to respond to exercise; the entire load does not fall on his heart. Athletes do not necessarily die early. The ages of the contestants at the 1964 Olympic Games in Tokyo ranged from 13 to 66 years. This does not bespeak early death.

Considerable evidence is forthcoming that reasonable and regular exercise keeps the heart fit and the blood vessels young. James Mackenzie, a famous physician, wrote over 50 years ago: "It may be laid down as a general law that every organ in the body is benefited by the exercise of its functions. The benefit does not accrue merely by the exercise at a low level, but by periods of increased efforts followed by periods of comparative rest."

K. F. Wenckebach, a leading German cardiologist, echoed the same view in 1931. As far as the blood-vessels go, there is no doubt that exercise delays the onset of arteriosclerosis.

Paul White, one of the foremost cardiologists of our day, has reiterated this view. So enthusiastic is he about exercise that he rides a bicycle every day in his native Massachusetts, where cars practically outnumber people. Most people exhort you to "use your head", Paul White entreats you to "use your legs".

The danger arises only when the athletes stop exercise and run to seed. Then and then only comes the risk of heart attacks.

SUITABLE EXERCISES

The Commonwealth Council for National Fitness has given a programme for exercises. They are in three graded stages, each stage requiring a certain degree of fitness. For instance, for the first stage you have to be 'mildly fit', for the second, 'moderately fit' and for the third 'very fit'.

Then there are some exercises which help you to relax mentally—something which most heart patients need badly. These are Yogic exercises, and are not really difficult.

Modified form of Shavasan (Yogic exercise): Eat a light breakfast an hour before the exercise and wear light and loose clothes.

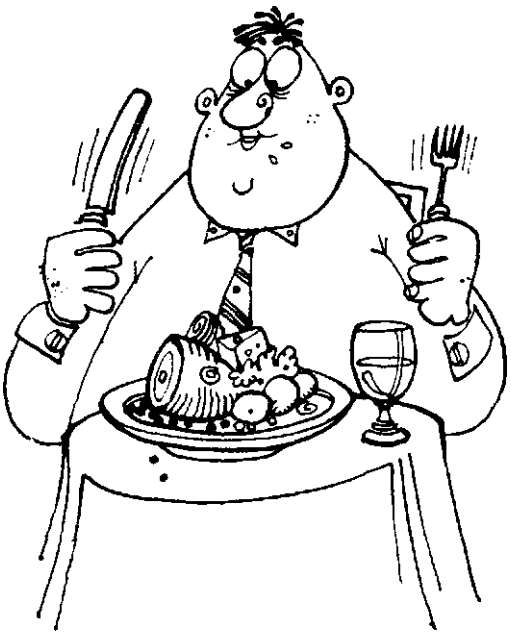
Lie flat on the floor, legs 30 degrees apart. Stretch out the arms to an angle of 15 degrees from the trunk, with the fingers semi-flexed. Now close your eyes and start breathing, slowly, rhythmically, with your abdomen, with a short pause after each inspiration and a longer one at the end of each expiration. Once you have got into the rhythm, try to concentrate on the sensation at the nostrils, the coolness of the air you breathe in and the warmth of the air breathed out. This helps to take your mind off your usual thoughts, to forget your environment. You begin to relax. Now let your muscles go loose, till you feel the heaviness of different parts of your body. This will come automatically once you start doing the exercise correctly. Carry on for 30 minutes without moving, lying limp and breathing. Get someone to check if you are completely relaxed, by lifting up an arm or a leg and letting it go, just to see if it is really limp. Most people can learn to do the exercise correctly in about three weeks. When they do, they get that relaxed feeling, mental and physical, which lasts the whole day.

Exercise should normally be the rule in health. It is also necessary for patients with heart disease, the type and amount of exercise being determined by the physician.

17

Diet And Heart Disease

WARS and women may shape the destinies of some men, but food decrees the fate of millions. There may be too little of it or too much. There may be just enough of it, but



"Make a banquet of every meal..... and the hospital will have a ready reservation for you."

then it may be of the wrong sort. Food is essential for life, but food can also kill.

All the civilisations of old knew that food could be of the utmost importance in treating disease. The Egyptians, the Greeks, the Romans, they all pinned their faith on regular regimens for the sick, of baths and massage, of rest and food. The diet had to be well balanced and "opportunely given". In the eight books of the Charaka Samhita, there is one called the Bimana Sthana which deals with "proper" food and diet.

Thomas Sydenham, (1624-89.) an English physician, was probably one of the first to point out that it is quite important to keep the diet "low". This he probably did because he himself suffered from gout. But this advice could not have been popular in his day because everyone who could afford it made a banquet of every meal.

The food we eat contains fats, carbohydrates and proteins, salts and vitamins. Each of these plays a part in keeping you well or in making you sick. The total quantity you eat also counts. All these various factors can influence the heart. That they indeed do so is now an established fact.

What do Fats do to the Heart?

That fat is concerned in heart disease is now quite certain, especially that form of heart disease due to arteriosclerosis.

CHOLESTROL

Then there is cholesterol. This is the lipid which is actually laid down in the wall of the artery in arteriosclerosis. Cholesterol, however, also has its uses; it is present in almost every human cell. It is an essential part of the brain, the liver, the kidney, etc. Moreover, it is a close cousin of certain vitamins and hormones which are known to be essential for life and health Cholesterol is found in blood, its level is usually between 150 and 225 milligrams per cent.

Cholesterol comes from certain foods such as brain, liver, kidney, sweetbread, scallop, oyster, yolk of egg, lobster, crab, pork, cheese, cream, butter and ghee. Most fish are low in

cholestrol and vegetables contain none.

Not everyone eats these exotic and somewhat unusual foods; but still they can have arteriosclerosis. This means that the cholesterol does not come only from the cholesterol-high foods. It can be made in the body and by the body; in fact, it is synthesised in the liver.

A check on saturated fats in the diet is important. A diet high in saturated fat goes with a high blood cholesterol and high blood cholesterol goes with arteriosclerosis. The substitution of unsaturated fat for the saturated ones can keep down blood cholesterol levels, can perhaps delay or reverse arteriosclerosis, can keep the arteries young and supple.

After a meal, fat is absorbed from the intestine into the blood and into the lymph vessels. In the blood you can actually see it floating in the serum as a fine droplet suspension. This is carried to the liver. The liver tries to use some of it, what it cannot use is dumped into the fat depots of the body, under the skin, in the abdomen and so on. Whatever fat is not used by the body, whatever is in excess is "available" for being laid down in the wall of the artery the minute conditions become favourable. Arteriosclerosis is twice as common in the obese.

In short, it is the depositing of cholesterol in the arteries that is the starting point of arteriosclerosis. When the level of cholesterol in the blood is high, it is most likely to be laid down in the wall of the artery.

Though most of the proving of this fact has been done in the past two decades, the idea is not new. For in Leviticus (approximately 586 B.C.) it says: "The Lord said to Moses: Say to the people of Israel, you shall eat no fat." This referred to fats of animals that had died a natural death, but "eat low fat" could profitably be the signature tune of diet today.

But the sceptical have always quoted the example of the Eskimo, who is conventionally supposed to down vast quantities of fat and to be remarkably free from arteriosclerosis.

Hard facts and figures of the incidence of arteriosclerosis in Eskimos have so far not been available. One report from Alaska in 1960, puts it as a cause of death in only about 18%.

Possibly the Eskimos do not live long enough to get this disease (their life span is not known, but it is low). But then do they really eat as much fat as they are supposed to? The staple diet is meat, mainly of marine animals. It is high in protein certainly, high in fat perhaps. But the fat of marine animals is known to have a large content of unsaturated fat, and this may be the protecting factor for the Eskimo.

Can unsaturated fat reverse arteriosclerosis? This will be its real proving ground. In man it is difficult to prove. It has been done in rabbits. It probably will be done in man, too But it is simpler to keep the arteries healthy than to reverse the changes after they have occurred.

In India coconut oil is favoured in certain regions. Every where, cream, butter and ghee, especially real ghee, are held in high esteem. In recent years, the rising prices and scarcity have put them right outside the reach of most of us. This is really a blessing in disguise! Vegetable ghee remains but, with the spread of knowledge, this too will go.

CARBOHYDRATES

Carbohydrates are the starches and sugars so dear to everyone. The child loves sweets and potato chips, the elderly the soft mushy foods which do not have to be chewed. And most of us like rice, macaroni, puri, bread and jam, biscuits and cake, honey and nuts. A lot of people would not relish a meal without rice or without potatoes.

Carbohydrates, most of them anyway, are less expensive. They are often therefore substituted for the more expensive proteins and fats. Their pleasant taste makes them popular. They are often very filling. For one reason or other, people eat more of them than they need.

All these starches and sugars are really saccharides, which means they contain carbon, hydrogen and oxygen atoms, in varying proportions. The saccharides may be very simple or very complicated. The simplest of all, the monosaccharides, with a formula $C_6H_{12}O_6$ the numbers referring to the number of atoms they contain. Then come the disaccharides, with double the number of atoms. Finally there are the polyaccharides,

which contain any number of the $(C_6H_{10}O_5)$ complex.

Examples of the monosaccharides are glucose (dextrose) and fructose (fruit sugar). The disaccharides are ordinary sugar, derived either from sugar cane or from beetroot, depending on where you happen to live. The disaccharides also include lactose (milk sugar) and maltose (malt sugar). Polysaccharides on the other hand are starch proper.

Whatever the carbohydrate, poly- or di-saccharide, it is all broken down by the digestive juices into the simplest sugars, the monosaccharides. Rice and potatoes, bread and jam, milk and biscuits, all end up simply as glucose, fructose or galactose.

GLUCOSE

From the intestine, the glucose enters the blood stream. The normal fasting level of glucose in the blood lies between 80 and 120 mg. per cent. After a meal this figure of course rises. But floods of glucose cannot normally be allowed in the blood stream. (This does happen in diabetes, and then it upsets all the other interlinked metabolic processes of the body). Besides, levels above 180 mg. per cent lead to leakage of glucose into the urine. Then again, a glucose excess in the body tissues lays them wide open to infection, for germs love a sugar-laden environment.

Now glucose is an absolutely indispensable source of energy for the body. The body must have the glucose which follows the digestion of the carbohydrates. But how and where can it store this glucose? Glucose is soluble in water, but it cannot be allowed to pile up in the blood stream. So the body converts it into glycogen, a compound consisting of hundreds of glucose units but with a difference; it is insoluble. Now glucose can be stored, not as glucose, but as glycogen. This conversion is effected with the help of insulin, a hormone which comes from the pancreas.

GLYCOGEN

Glycogen is stored, in the muscles and in the liver, the proportion being 4:1. Muscle glycogen remains in the muscles,

till they start working. Then it is broken down to provide energy for the working muscles. Liver glycogen remains in the liver cell. It is there for replenishing the falling level of blood glucose. And the blood needs glucose for nourishing the hundred and one tissues which take part in the proper functioning of the body.

Whatever glucose is not stored as glycogen is converted into fat. And this fat piles up in the fat stores of the body. This is what makes a high carbohydrate diet dangerous for the heart.

Where do carbohydrates come from?

Any part of a plant, whether it be root or stem, leaf or flower, fruit or seed, contains carbohydrate. It makes no difference whether you call it vegetable or pulse, cereal or nut, it is carbohydrate. Then there is honey, "manufactured" by the bee, yet classified as a food of nature. There is a vast array of these foods. Their colours, flavours and aromas are so multitudinous that they can never pall. Many of them, however, are indigestible in the raw state. Their preparation for the table has evolved gradually, leading to the concoction of dishes containing more and more carbohydrates. Thus, sugar is added to fruit to make jam, jaggery is mixed with nuts to make chikki and kernel of coconut is pounded with spices to make the curry which goes with rice. Man thus adds even more carbohydrate to make carbohydrates more palatable!

(See the chapter "Diabetes" for detailed information on carbohydrate content of food articles).

There is no truth in the belief that lump sugar (khadee sakhar) and honey can be eaten with impunity, as the carbohydrate they contain is not harmful. Lump sugar is just sugar, weight for weight, with the same caloric value as sugar. And one teaspoon of sugar has 15 to 20 calories. Honey consists of a mixture of glucose and fructose with a caloric value of about 320 calories per 100 gm.

Diabetics of course have to be more strict about the carbohydrates, for they are short of insulin which has to convert their glucose into glycogen. The overweights also have to ration

their carbohydrates because carbohydrates can be turned into fat.

THE DEADLY TRINITY

Being overweight and having diabetes both tell on the heart. And with diabetes goes a high blood fat (lipaemia) and arteriosclerosis, the degeneration of the arteries which spell angina and heart attacks. Obesity, diabetes and high blood-fat might almost be called the "deadly trinity". Though they can occur singly and damage the heart, they are positively lethal together.

That there is a link between high carbohydrate diets and heart attacks has been suggested in the recent past. Those who prefer extra teaspoons of sugar in their tea or coffee may be running extra risks for heart attacks.

Is this cause and effect? The question is intriguing.

Can sugar be as important as fat in keeping up the level of lipids in the blood? People have tried to find out the answer in various ways:

(1) by restricting the sugar intake of patients who have recovered from heart disease.

(2) by replacing part of the sugar intake with an equivalent amount of starch.

Surprising and unexpected have been the results. The blood lipid level has fallen in both groups.

Some authorities are convinced that sugar is even more harmful than fat. For, they say, a diet high in fat is also often high in sugar. It is possible therefore that the statistics relating a high fat diet to heart disease may in fact be relating a high sugar diet to heart disease!

The truth probably lies somewhere in between these extremes of view, that a high-fat high-sugar intake is bad for the heart.

VITAMINS

Vitamins are not food. If you lived on them alone you

would starve to death. But you cannot live without them either, for they activate many vital processes in the body.

Vitamins are present in most normal diets, present in amounts sufficient for the needs of the body. But when nutrition becomes subnormal, or when the needs of the body are increased, trouble starts.

Nutrition depends, of course, on what you eat and how much you eat. Sometimes from poverty, deprivation or ignorance, from faddism, fetish or pure cussedness, the diet may be deficient in vitamins. Or in cases where the diet may be good, there may be lack of appetite. Those in heart failure, often have no appetite. This is the result of congestion in the intestines and liver.

Children and pregnant women have an even greater need of vitamins, for growth demands extra vitamins.

The vitamin which concerns the heart most is B. The others A, C, D and E will be mentioned in passing.

With vitamin A, the connection is nebulous. It has been suggested that in rats a deficiency of vitamin A in early pregnancy can lead to a defect in the heart of the unborn child. Could this be true of humans, too?

Vitamin B_1 or thiamine, on the other hand, has been proved to be essential for the heart. This vitamin, found mostly in the husk of cereals, may be deficient in the diet. Grain is often polished and the husk removed to improve appearances. With the husk also goes vitamin B_1. The result of eating only white rice or white flour is a disease known as beri-beri. This word was in use in Java in 1642, but its origin is much older, for references to it were traced to 2697 B.C. Beri-beri affects hens, too. Moreover, what goes for hens goes for man, for giving them the husk as well as the rice cures them. Beri-beri was noticed in prisoners of war camps during the last war. It is also found in cases where the diet is restricted, in the never-hungry chronic alcoholic or in the ever-fussy food faddist.

Beri-beri is of two types: the wet type affects the heart and the dry one the nerves. When it is the heart, the patient feels very tired and complains of palpitations and a racing heart rate. Then come breathlessness and swelling of the body and

all the signs which point to a failing heart. Still later, in severe cases, faintness, fall in pressure and shock may complete the picture. This fulminating disease of the heart has been called "shoshin" beri-beri, "sho" in Japanese meaning acute damage

"Come, my son, you have nothing to fear so long as my intentions are good."

and "shin" the heart. Fortunately, all cases do not end up like this, they remain in a chronically ill state but they can be rapidly rescued with large doses of vitamin B_1.

Vitamin B_7 (nicotinic acid), another member of the B

complex, is probably also tied up with the heart. Though no heart disease has yet been attributed to lack of it, changes in the cardiogram are certainly seen in pellagra, which is known to be due to a deficiency of B_7. The changes may also possibly be due to deficiency of other vitamin B factors, associated with Vitamin B_7.

Lack of vitamin C may also affect the heart, usually during the course of scurvy. Scurvy is specifically due to deficiency of this vitamin. It was common in the sailors of old who had to live for months on end on salt meat and dry biscuits, a diet totally devoid of Vitamin C. Today, with refrigeration, sailors can enjoy a normal diet of fresh fruit and vegetables, and scurvy is unknown in them. Vitamin C can be deficient in the diet of small children; they can (and do) still get scurvy. Vitamin C deficiency is also known to be a contributory factor in rheumatic fever.

With D, the position is reversed. It is not lack of D that counts in heart disease, but too much of it.

Overzealous mothers may stuff the child with large doses of D and with a D-fortified milk for good measure. What is even worse is that the child may be given a calcium syrup as well. All this is done with the best of intentions, of course in the belief that D and calcium will give the offspring sound teeth and sturdy bones. But it misfires: calcium is laid down in the muscle of the heart, in its valves, and in the arteries, in places where it is least wanted.

It cannot be overemphasised that there is a correct dose of vitamin D for a child, and that this dose is 500 to 1500 international units a day. If vitamin D-fortified milk is given, the daily dose of vitamin D should be suitably reduced. And under no circumstances should the child be given extra calcium. Calcium is already present in milk, this is enough for the child's needs.

Claims have been made that vitamin E is useful in cases of angina and that it prevents arteriosclerosis, but the available data does not substantiate this claim.

SALT AND THE HEART

No one can doubt that salt is a very essential part of the body. It is present in every living cell. It is so important that the body makes every effort to maintain it within a certain range throughout life. Normally this is not difficult, because most people eat far more salt than they require. In health, what is eaten in excess is excreted by the kidney.

Salt is bad for certain conditions, notably for a failing heart, a high blood pressure and diseased kidneys. Salt then has to be avoided in the diet. But this is not easy. For salt is present in every natural food and even in drinking water (in smaller or greater quantity). More salt is added during cooking for good measure!

Salt is a compound, known to the chemist as sodium chloride (about 40% of this is sodium). And it is the sodium which causes harm in heart and kidney disease. Moreover, it makes no difference whether it is sea salt, bay salt or rock salt: all are sodium chloride.

If you are asked to keep away from salt, what should you do?

The average normal diet contains anything from 5 to 10 gm. of salt. This is beyond what a bad heart or high blood-pressure can stand.

The first thing is obviously to stop adding salt during cooking or while eating. This sounds easy, but ask a cook not to add salt to food, and see what he says! Besides, when cooking for a large family, it may not be easy to cook everything separately without salt for one person. And eating food *without salt is a taste which* has to be cultivated.

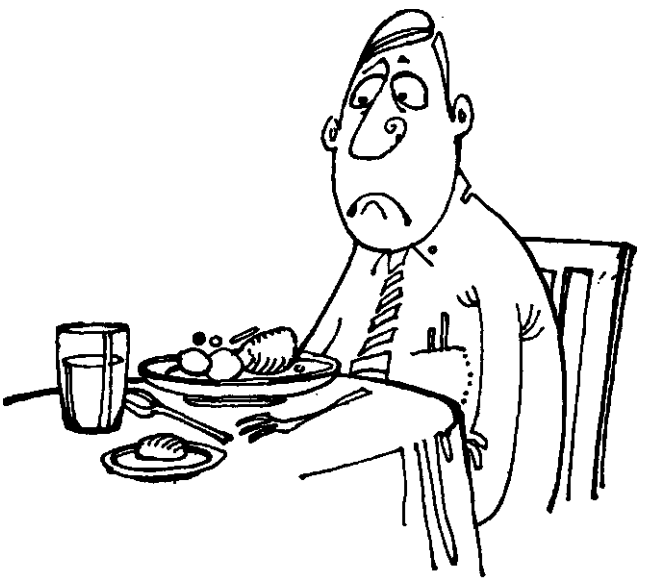
Lemon juice and mustard help sometimes to disguise the lack of salt. For those who can never learn to relish saltless food, there are salt substitutes. But care has to be taken to choose one without sodium, or the substitute will be as bad as salt itself!

Even after heroically foregoing salt in cooking and salt at table, the average diet still contains 3-4 gm. salt a day. This too may be too much. Then the cuts have to be even more

drastic, the heavy sodium containing foods have to be avoided. They are the foods which habitually contain much salt, either because salt is added during the processing or because salt is present in them anyway from the beginning.

As it is really the sodium in the salt which matters, other sodium containing foods must also be kept in mind. They include chemicals, e.g., sodium benzoate which is often added as a preservative, sodium alginate which is often used in making commercial ice creams, soda bicarb which is used as a leavening agent. In fact, very little sodium is consumed this way, but it is just as well to remember that sodium benzoate, sodium alginate, etc., are all hidden sources of sodium in the diet.

With careful control of the diet, it is possible to bring down the daily intake of sodium to about 1.0 gm. a day. To go even lower, to less than 0.5 gm. a day, you have to go on a



"It's better to go on a hunger strike for a separate state for heart patients!"

boiled rice, glucose, fruit juice diet, a diet which even the most compliant patient cannot stand for more than a couple of weeks.

Just so that you do not get depressed with too many "don'ts" in the diet, there is a diet list which also tells you what you can eat.*

TEA AND COFFEE

Tea belongs to the Camellia family, and its proper name is Thea, sinensis or assamica. The name "tea" comes from the

"Two leaves and a bud..... and the cup that ***cheers.***"

Amoy dialect "t'e", while the more homely "chah" is probably

* *See Diet Table and Sodium content in particular*

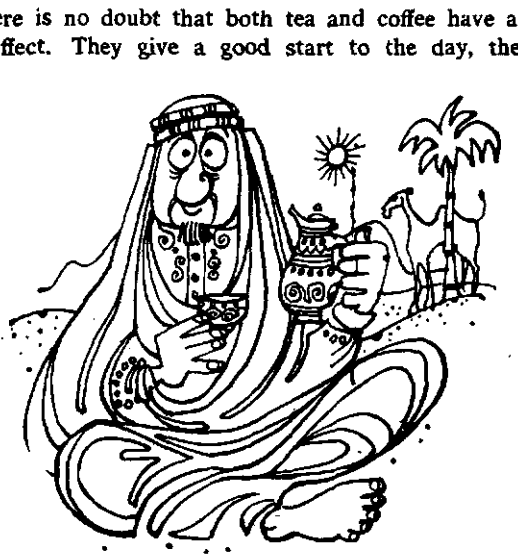
from the Mandarin word "ch'a". It is a shrub, with fragrant white flowers, which are reminiscent of its first cousin, the camellia.

Tea contains, amongst other things, essential aromatic oils, tannin and caffeine. The essential oils give the flavour, the tannin the "strength" to tea. It also contains theophylline, a chemical which with caffeine enhances the flow of urine.

The actual discovery of coffee is shrouded in mystery and, as is usual with anything shrouded in mystery, it is embellished with a multitude of myths.

Coffee contains 0.8 per cent caffeine. An aromatic oil, caffeone, which develops in coffee after roasting, gives it the distinctive flavour. Coffee is often deliberately mixed with chicory root, which makes it bitter but adds nothing to its stimulant effect or to its aroma. While caffeine gives coffee its physiological value, it is caffeone which gives it commercial value.

There is no doubt that both tea and coffee have a stimulating effect. They give a good start to the day, they keep



'Dessert' and coffee

things going when mind and muscles are flagging and they put a delightful finishing touch to a meal. In business and industry, the "tea (or coffee) break" has become a jealously guarded rite and trade unions have been known to strike for it.

It is the caffeine in tea and coffee, that gives them their stimulating effect. It is the same caffeine in the 'mate' of South America and the cola drinks of many countries that provides the stimulant.

Long before anyone knew of these drinks, people in various parts of the world knew of the stimulant action of parts of certain plants, parts which we now know contain caffeine. In Central Africa, it was the cola nut, in Brazil the seeds of Paullinia sorbilis, in Virginia a species of Ilex.

Tea, coffee and cocoa all contain caffeine.

Caffeine stimulates by acting on the central nervous system as well as on the muscles. It also increases the flow of urine, quickens the pulse and breathing. But caffeine also has other effects, especially when people take it in excess or when they happen to be unduly sensitive to it. Caffeine can keep one awake, sometimes all night, and land one with a headache and occasionally even delirium. Flashes of light, convulsive jerks of the hands and tremors are all well known. Stepping up of the pulse rate, palpitations in the chest and sometimes even discomfort, may occur and may not even be suspected of being due to tea and coffee.

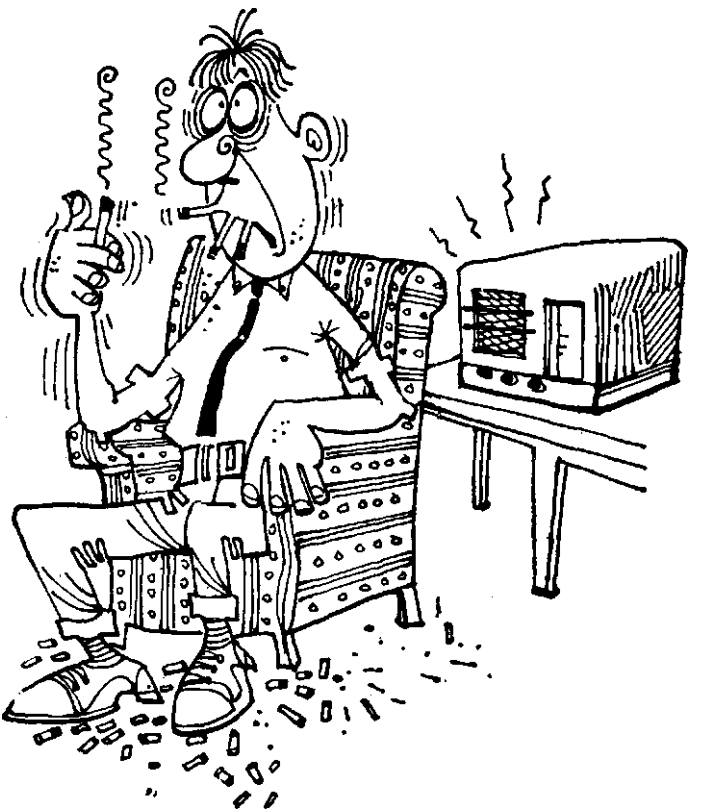
Gastritis and stomach upsets, sometimes even bleeding, make coffee absolutely taboo for those with chronic ulceration anywhere in the stomach and intestine.

Is there a sinister aspect to coffee drinking? It has been found that coffee drinking increases the fats circulating in the blood. If coffee drinking does indeed raise the blood fats, it may be expected to lead to arteriosclerosis and one observer has actually related the amount of coffee consumed to the later development of coronary heart disease (usually due to arteriosclerosis).

TOBACCO

What is there in tobacco? Why do people enjoy it? So much so, that Burton, for example, in his "Anatomy of Melancholy" even runs out of superlatives in describing it: "Tobacco divine, rare, super excellent, goes far beyond all the panaceas, potable gold, philosopher's stone".

Tobacco leaf contains nicotine 1.5% to 9%, essential oils which give it its flavour, nicotianin which gives it the odour,



"Going 'out' in smoke."

certain acids, sugar, cellulose and aminoids. When it is burnt, the ash contains insoluble carbonate of lime and salts of potash, ammonia and nitrates (but not of soda, which is odd). Incidentally, it is the potash content which makes a lighted cigar glow spontaneously.

Though people have at various times in various places analysed and reanalysed various tobaccos and various cigarette papers, it is the nicotine which is the chief culprit. From a tobacco containing only 0.3% nicotine, the smoke may contain 85% nicotine. Each cigarette has about 1 gm. of tobacco. Its smoke contains 5-9 mg. of nicotine, while the smoke of a cigar contains as much as 15-40 mg. Filters are claimed to remove nicotine, but they remove only a small fraction of it.

Moreover, it makes no difference whether tobacco is smoked, chewed or snuffed. The nicotine insinuates itself into the system.

What is Nicotine?

The medical dictionary categorically says that nicotine is a "liquid poisonous alkaloid... one of the most active poisons known". The active principle of the leaves of lobelia inflata (Indian tobacco) too is "actively poisonous".

The pharmacology books are somewhat longer-winded than the dictionary (after all they have to cater to a sophisticated intelligence) but they too are unanimous in their final verdict. Nicotine is and always has been a poison. Tobacco has kept going over the centuries partly because of its availability but mainly because of its addictiveness.

Nicotine has two effects. It excites and it depresses. These are mutually contradictory, and instead of cancelling each other out one follows the other, first the excitation and then the depression. This action is on the autonomic or vegetative nervous system. This part of the nervous system controls itself. It regulates the pulse rate, the activity of the intestines, the secretion of sweat and so on. In other words, it controls those activities of the body which are not under the voluntary control of ordinary mortals.

To start with, the novice may feel intensely nauseated. This passes off with practice. But then come the long term effects, tremulousness and tremors, faintness and dizziness and perhaps even convulsions. Nicotine can act quicker than lightning. Only one other poison can compare with it for sheer speed, and that is cyanide. Moreover, nicotine is entirely unpredictable. In more ways than one it resembles the cobra! Tobacco blindness is also well known. It may not be common, but it finds a place in all the books on nervous diseases.

The lungs and breathing passages suffer heavily. Chronic irritation by the caustic nicotine gives rise to the so-called smoker's cough, in later stages to breathlessness, wheezing and pain in the chest. The delicate lining of the breathing passages becomes unhealthy. There is a greater liability to catch infections, colds go on to bronchitis and to bronchopneumonia. The function of the lungs suffers, blood brought to them for aeration, for oxygenation, goes back imperfectly aerated. Adequate oxygen is a sine qua non for good health. The heart feels the strain, tries its best, but eventually fails in the face of this advancing lung disease.

Moreover, there is abundant statistical evidence that tobacco smokers and chewers run a higher risk of cancer. The danger spots are the mouth, the membranes lining the breathing passages and the lungs themselves. This may be the result of the irritant effect of nicotine, or it may be due to the heat of the smoke. Even if you manage to escape these, there are other dangers: in fact about sixteen distinct cancer-provoking substances have been isolated from tobacco.

On the heart and blood-vessels, the effects of tobacco are no less dire. It steps up the heart rate, shoots up the blood-pressure, increases the amount of blood pushed out by the heart with each beat. What is the net result of all this? The work-load of the heart becomes greater. This is embarrassing enough for a normal heart; for a diseased one it may spell disaster. The heart is put at a further disadvantage by the effects of tobacco on the blood-vessels; their walls degenerate, become arteriosclerotic. When these changes take place in the arteries bringing blood to the heart muscle itself, i.e., in the

coronary arteries, the blood supply to the heart muscle becomes totally inadequate for its needs. Heart pains (angina) follow, then come heart attacks proper.

The protagonists of tobacco may here cut in and remark that heart pains and heart attacks are also to be found in tobacco abstainers. Quite true, but statistics show that tobacco can and does add one more risk factor to this heart disease, for there is a direct relationship between the amount of tobacco consumed and the death rate from this, the most common form of heart disease. This table reproduced from the National Cancer Institute, Monograph No. 19, shows this relationship:

Age	Sex	Non-smokers	Smokers			
			No. of cigarettes daily			
			0-10	10-20	20-40	Over 40
45-54	Men	1.0	2.4	3.1	3.1	3.4
45-54	Women	1.0	0.9	2.0	2.7	—

Watch the death figures crawling up with the increase in the number of cigarettes daily. And see the advantageous position the non-smokers occupy! Tobacco does indeed add one more to the risk factors which precipitate coronary heart disease and to sudden death.

Apart from the heart, tobacco is known to give rise to a peculiar disease of the arteries supplying the limbs, a disease which causes narrowing of the arteries, narrowing to such an extent that even walking a few steps becomes impossible. For the narrowing cuts down the blood flow, the muscles are starved of blood and go into agonising cramps on the slightest exertion. This disease, Buerger's disease, was thought at one time to be the bane of East European Jews, but ideas have now changed. A well-known monarch of our age, neither East European nor a Jew, had this disease.

It is said that smokers are less rigid than non-smokers, more extroverted but also more neurotic. But this may not be cause and effect, it may be a mere coincidence. Some regard it as a status symbol, others are attracted by the ritual of the practice. Whatever it be, it gives rise to a dependence on

tobacco, which makes it difficult to give it up. This dependence is exploited to the full by the taxation departments of every government in the world. The tax on tobacco mounts with each successive budget, yet tobacco consumption goes on increasing. Tobacco continues to be used. Even people who know that it increases the risk of cancer and coronary heart disease continue to use it. They feel the doctors are just crying "wolf"!

Electric Aversion Therapy is now being tried to help people stop smoking. The principle is based on the fact that producing an aversion can help in unlearning a habit. The aversion in this instance is created by giving mild electric shocks to the forearm with a small battery operated shock-box.

Aversion therapy is also being tried for alcoholism and sexual perversions.

ALCOHOL

Alcohol is strictly not a medicine, yet it is the most widely used self-medication of all times. It is usually not prescribed as medicine, but it appears in every pharmacopoeia of the world.

In the Middle Ages, the making of wine was carefully nurtured by the Church as well as the State, for it was much appreciated. There is the story of the dashing knight, who went on one of the Crusades to the Holy Land, taking with him his own supply of wine. When he got there, however, he found that the wine had turned sour. So he turned tail and scampered back home, unable to face living in a country without his favourite wine.

Alcohol does have certain medicinal uses. Every civilisation in fact has used it in the treatment of the sick. Inscribed on the papyri which have been dug out of the hot sands of Egypt are some of the medications of 3500 B.C. For giving these, the Egyptians used beer, of which they had several varieties, plain, bitter, flat and cold. One of their prescriptions consisted of a combination of walnuts and dates, herbs and honey, all soaked in sweet beer.

The Assyrians and Babylonians made brews of garlic, chrysanthemums and manna in palm wine and calf's milk. And if calf's milk was not forthcoming (and it is beyond the imagination how a calf could give milk) they very thoughtfully suggested 'fermented drink' as an alternative. Hippocrates believed that therapy should assist nature. Though he knew many drugs, his treatment was confined to fresh air, good food, barley tisans, purging, massage and wine. For a disease called 'kardiokon', (which could have been a heart attack from its description), the Romans pinned their faith on astringent poultices to the chest, measures to prevent sweating and small quantities of food and wine.

Nearer home, the surgical achievements of ancient Indian medicine were the highest recorded in antiquity. But our materia medica was no less rich and varied. The 2nd-century physician Charaka was familiar with 500 medicinal plants. His surgical counterpart Susruta, knew about 760. Medications were classified according to the effect they produced, e.g., emetics, purgatives, sedatives, tonics, aphrodisiacs, antidotes and so on. And no less than 13 alcoholic brews were mentioned.

Ibn Sina or Avicenna (980-1036 A.D.), perhaps the most celebrated of the physicians of Baghdad, was the first to describe the preparation and properties of alcohol. The word 'alcohol' is derived from the Arabic 'alkohl', the powder used for staining the eyelids. And the term 'whisky' comes from the Gaelic 'uisge' (beatha), which is water (of life).

Alcohol, the drinkable variety, is ethyl hydroxide. Its chemical formula is C_2H_5OH in other words, it contains the same elements as the starches and sugars, and also the fats. This explains why it has a caloric value too. One gram of alcohol yields 7.1 calories.

What happens to alcohol in the body?

When you drink alcohol it is absorbed completely from the stomach and small intestine into the blood. Its absorption is delayed by food. From the intestines it reaches every nook

and corner of the body. Some of it is excreted in the breath. This forms the basis of the breathalyser test for motorists suspected of being under the influence of liquor. A little also passes out by way of the urine. Most of it, however, is disposed of by the liver. It is acted on by an enzyme (a chemical ferment), made into an aldehyde and finally broken down into carbon dioxide and water. Most people would be aghast if they knew that the bottle which costs a tidy sum ends up as gas and water.

The liver, then, is the key organ in the disposal of alcohol. Any liver which is sick is therefore unable to stand alcohol.

How long does it take to get rid of alcohol from the body?

Quite some time, unfortunately. The actual rate is about 10 to 15 ml., about two teaspoons in one hour.

The main effect of alcohol (and this is the most common reason why it is taken) is on the higher centres of the brain. Most people think it is a stimulant, but, in fact, it depresses. It depresses the higher centres, it removes inhibitions, it releases repressions. Whether it be love or hate, greed or aggression, feelings are more readily ventilated after a drink. Emotional outbursts abound. Anxieties and worries disappear, a feeling of warmth and well-being pervade the senses. Confidence is restored, but this does not necessarily indicate increased ability or better performance. In fact, it may be quite the reverse. Mental mathematics, scoring bull's eyes, or anything which requires practical skill and judgement, are dulled. Attentiveness and ability to take quick decisions decline. These effects are highly undesirable for a person in a responsible position, when failure to take a correct decision may be disastrous. However, by removing inhibitions, alcohol enables a man to act effectively under certain conditions. This is why it is distributed to sailors and soldiers before a battle engagement. And this is the reason why alcohol makes a social function go.

Alcohol also induces sleep. This effect of alcohol has been exploited more by lay people than by doctors. If often saves

them from taking sleeping pills. Incidentally, people who take sleeping pills as well as a drink often forget that both are capable of inducing sleep, that sometimes the soporific effect of the two together may prove fatal.

Alcohol has been used for relieving severe pain, by injecting it into or close to the nerves concerned.

The effects of alcohol have been admirably summarised in this well-known alliteration.

If your blood has	Then you are
1) Less than 1 mg. per ml. of alcohol	dry and decent ...
2) 1-2 mg. „ „	delighted and devilish
3) 2-3 mg. „ „	delinquent and disgusting
4) 3-4 mg. „ „	dizzy and delicious
5) 4-5 mg. „ „	dead drunk!

As far as sexual functions are concerned, as Shakespeare has so pithily put it, "Alcohol provokes the desire but it takes away the performance."

The feeling of warmth after a drink is due to dilatation of the small arteries under the skin. A rosy flush can be seen in the skin. This makes people going out into the cold think that a drink does them good. In fact, heat is rapidly lost through these dilated vessels. Exposure to cold may then result in a chilling. The feeling of warmth may be quite deceptive. Arctic explorers know only too well the myth that alcohol keeps one warm.

Alcohol dilates the skin vessels, but there is no definite evidence that it dilates the coronary arteries which carry blood to the heart muscle. Though the arteries may not dilate, anxiety is allayed and this reduces the trigger point thereshold of the pain. Glyceryl trinitrate is the correct drug for the relief of angina, but alcohol does sometimes help.

The food value of alcohol is something most of us overlook. No one thinks of it as a food. But it does have calories.*

* *See Table No. XIV*

If you have to keep your heart's work load low, you have to keep your weight low. A low weight means a low calorie diet; and, in alcohol, calories certainly abound.

This food value of alcohol has another effect, quite an unexpected one. Some people literally take **it as a food,** in other words instead of food. This is the beginning of nutritional deficiencies, chiefly deficiencies of protein and vitamins (of the B complex group). Both tell on the heart, the liver and the nerves. Changes of degeneration may set in, and, if left unchecked, may become irreversible.

Alcohol, in reasonable amounts, makes the digestive juices flow, improves the appetite and helps digestion. In people with peptic ulcer, where excessive amounts of digestive juicese are not wanted, alcohol is inadvisable. But for most others, especially those who like the taste of it, or those who have lost their appetite, a drink can be most helpful.

Too much of it, however, especially on an empty stomach, can wreak havoc on the lining of the stomach. Moreover, alcohol should never be taken in concentrations over 50%. Such concentrations are known to be inflammable outside the stomach. Inside it, they are even worse! Chronic gastritis, with vomiting and complete loss of appetite, is well known to all alcoholics.

18

Sex And The Heart

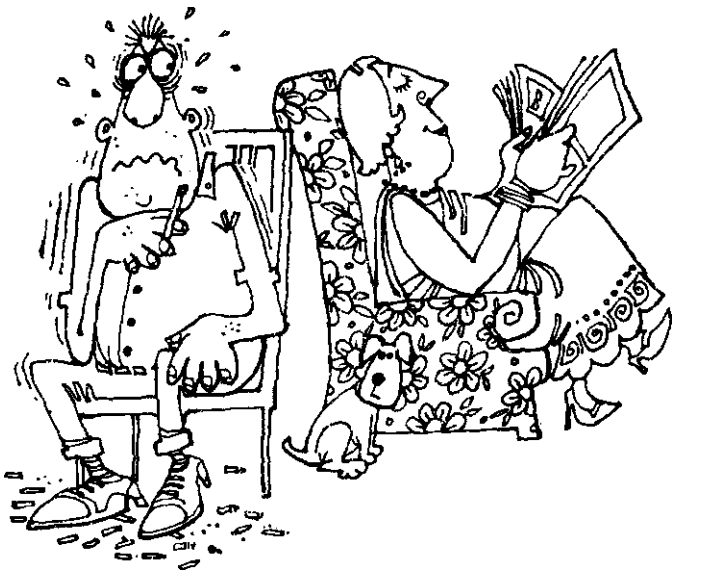
HEART disease does not differentiate between the sexes. But certain diseases of the heart occur more often in men, than in women. One other difference is that while the heart disease may be the same, the way it behaves in a man or in a woman may be quite different.

Among the defects present at birth, some types are found much more often in boys than in girls. The frequency is more than can be explained by mere coincidence.

Men generally fall a prey to diseases of the heart which follow on arteriosclerosis. This implies that they get heart attacks more often and at an age younger than women, perhaps because of the sex hormones. The female sex hormone is known to keep at bay the ageing process in the arteries. That this is indeed so has been suggested by the fact that after the menopause women are just as likely to be susceptible to arteriosclerosis.

High blood-pressure is another case in point. Though it is equally common in both sexes, men definitely come out worse. They are far more likely to get strokes and heart attacks as a result of a soaring pressure.

Women have to bear their crosses too. Some of the congenital defects are more than twice as common in women as in men. It is possible that some of these defects are linked to the genes which determine the sex of the child. The defect is, therefore, determined at the moment of conception and there is little that can be done about it.



"Arteriosceloris and high blood-pressure have a soft corner for men."

Then there is rheumatic fever and the heart disease which follows it. This too is predominant in girls, and this is particularly unfortunate as these girls have one day to bear the stresses and strains of pregnancy and child rearing. But rheumatic fever need not necessarily go on until it damages the heart. It can be checked, and its recurrence can be prevented.

PREGNANCY AND THE HEART

By far the greatest risk for a woman with any heart disease is the risk of pregnancy and childbirth.

The developing child (foetus) lies in the uterus. It is tethered to the uterus by the umbilical cord, which passes from the navel to the placenta, a spongy mass which develops inside the uterus during pregnancy. The cord contains blood-vessels which carry blood from the foetus to the placenta and back again to the foetus.

The mother's blood brings oxygen and nutrients to the placenta. From here, the oxygen and nourishment passes to the blood of the foetus. There is no mixing of the mother's blood and the child's.

To be able to keep a steady and generous supply of oxygen and nourishment to the foetus, the mother's circulation has to be considerably modified.

The blood plasma volume is first increased. There has to be more blood, because it has to provide for two bodies. Then, the blood itself is altered, for it has to carry extra oxygen for the foetus. This is done by increasing the number of red cells in the mother, for it is the haemoglobin in the red cells which has to carry the oxygen. However, this increase is not proportional to the increase in blood plasma. And lastly, the heart has to work more, there is more blood to push out with each beat. There are also more arteries for the blood to go through, for many blood vessels are opened up to facilitate easy access of the mother's blood to the placenta. The growing foetus is given top priority.

This is all right for the normal healthy heart. But not so if the heart is already working at a disadvantage; it will be working under added disadvantages during pregnancy. These will be further augmented during the process of labour, when the uterus has to push out the fully grown baby.

The commonest cardiac condition during pregnancy is rheumatic heart disease, associated with the narrowing of the mitral valve. In the absence of an enlarged heart or a diminished cardiac reserve, the mother can go through pregnancy without much difficulty. However, in heart failure there is increased danger to the mother and the foetus.

Subjects with high blood-pressure can go through a normal pregnancy, when the pressure is not very high. However, in very high pressure the chances of abortion and of a dead foetus are high and there is also greater danger to the mother during pregnancy. The blood pressure may be increased further during pregnancy and result in toxaemia of pregnancy.

As a rule in the absence of cyanosis, and marked polycythaemia (thickened blood) or marked impairment of cardiac function, the risk of pregnancy is minimum. However, when the heart is enlarged, the risk is similar to that noted in cases of rheumatic heart disease with similar functional disability. When the congenital heart disease is fairly advanced, or in the presence of an enlarged heart, it may be necessary to keep the patient in bed during the last three months of pregnancy or even earlier. Patients with a large heart and congestive cardiac failure should avoid pregnancy. In patients with persistent severe cyanosis (blue colour) and a large heart, the incidence of abortion is very high. During the last two decades it has been possible to correct tetralogy of Fallot (blue baby) and after this correction many women have undergone uneventful pregnancy.

Presence of pulmonary hypertension is an absolute contraindication for pregnancy.

SEX LIFE AND HEART DISEASE

The energy expenditure in a sex-act is roughly that necessary for climbing about two flights of stairs without getting symptoms (shortness of breath or angina).

Most heart attacks occur at an age at which sexual potency normally decreases. But this does not mean that all sexual activity must come to a full stop after an attack. A life of celibacy is fraught with stress, tension and frustration. And this is often worse than the heart disease itself.

Moreover, patients often may have had sexual difficulties before the heart attack. There may be loss of desire, a feeling of growing old and the patient becomes obsessed by the thought that he is losing his manhood or, if it happens to be a woman, that she has reached the change of life. These feelings may engender more strain, more tension, more difficulty. And then comes the heart attack.

After the attack, normal sexual relationships are not necessarily harmful. It is likely, that in most persons, the prolonged tension resulting from abstinence exceeds the greater

but briefer strain of sexual relationship. They may in fact help in maintaining marital harmony and in avoiding frustration and feelings of guilt. If a patient gets chest pain (angina) during the act the problem may be solved by prior use of a nitroglycerine tablet (sucked under the tongue) and by instructing the healthy partner to assume the major responsibility for the required physical activity.

In rare cases, there is an acute depression after the heart attack. A man, who may have been aggressive, independent and capable, becomes, after the attack, indecisive, demanding, irritable and fussy. He worries constantly, he cannot sleep, he forgets things and becomes paranoid. Loss of sex-drive makes matters worse. He feels he is a burden to his family and he may even think of suicide. He has to be brought back to a normal way of thinking, persuaded that his heart has duly recovered and that he should be able to live again. And that includes sex, too.

19

Facts And Fallacies About Heart

THERE are so many things that people want to know about the heart. But after a little while the questions begin to repeat themselves in a general pattern. What are the manifestations of heart disease?

Breathlessness: To consider those that are really due to heart disease must come first, and, of all of them, perhaps breathlessness is the most important. Breathlessness after an exertion that formerly had no such effect is often the first indication of heart disease. It is noted for the first time after a brisk walk, after climbing stairs or while running to catch a bus or a train.

Pain: Pains resulting from the heart are of course also important. The pain is in the centre of the chest (breast bone). It is a feeling of constriction or of tightness in the chest. How these pains can be distinguished from those not due to heart disease has already been described.

Cyanosis: (bluish discolouration) of the lips, cheeks, tongue, nails etc. is usually a manifestation of congenital heart disease (blue babies). However, it may be a manifestation of other conditions.

Fatigue: When heart disease is present, particularly valvular disease, undue fatigue at the end of a day or play, which formerly caused no fatigue, may be because of the weakness of the heart. However, fatigue is a very common symptom of other conditions as well.

Swelling (oedema): Swelling of the feet at the end of a day may be a manifestation of heart failure. In the early stages this

swelling usually disappears in the morning and reappears again in the evening. There are other conditions which may produce such swelling.

Palpitations: Most patients feel that this is a sure sign of heart disease. Actually they are not; they are sometimes an indication that the heart is beating rapidly but no more.

Missing beats: May give a terrifying feeling, but do not necessarily mean heart disease. They may be due to an excess of tea or coffee, or smoking (tobacco) and can often be remedied.

What are not the symptoms of heart disease?

Dizziness is not usually a symptom of heart disease, it is much more likely to be due to nervousness or to a disorder of the nervous system.

Fainting is also not usually due to heart disease. There are certain heart diseases which do produce fainting attacks, but they are rare.

Sweating: When a patient is in shock he perspires profusely and this may occur at the onset of a heart attack. However, sweating is often present in cases of cardiac neurosis

If you have a murmur, does it mean that you cannot climb stairs or take any exercise?

In most cases, a murmur is heard on routine examination and discovered quite accidentally. A murmur may be a sign of heart disease or it may not. It may be due to anaemia or even a fever, quite unconnected with the heart.

The presence of a murmur does not by any means preclude exercise. If the murmur is a "benign" one, and not due to disease of the heart, then there is no need for restricting exercise. If the murmur is due to a cause in the heart, then the exact cause must be ascertained. If, as is most frequently the case, the murmur is due to a rheumatic affection or due to a congenital defect of the heart, then it is sufficient to tell the patient that exercise must stop short of breathlessness and usually he finds out for himself how much he can do.

There is no doubt that a great deal of unnecessary cardiac invalidism is caused by telling the patient not to climb stairs and not to take exercise and not to play games. These restrictions often draw the attention of the patient to the heart and make the patient conscious of a defect which in fact may not even exist.

TABLE 1

TABLE OF FOOD VALUES

(Per 100 gms. of Edible Portion)

CHO = Carbohydrates
tr = trace
Na = Sodium

ROXIMATE PRINCIPLES AND CALORIES

CEREALS AND GRAIN PRODUCTS

Name of the food stuff	Protein gm.	Fat gm.	Fibre gm.	C H O gm.	Calories	Na mg.	Potassium mg.
1. Bajra (Bajra)	12	5	1	68	360	10	300
2. Barley (Jau)	12	1	4	70	335	15	250
3. Cholam (Juar)	10	2	2	73	350	5	130
4. Maize, tender (Makkai)	5	1	2	25	125	50	150
5. Maize, dry (Makki)	11	4	3	66	340	15	285
6. Oatmeal (Jav)	14	8	4	63	374	tr	340
7. Rice, raw hand pounded (Arwa chawal)	8	1	1	77	346		
8. Rice, raw milled	7	1		78	345	10	70
9. Rice, raw unmilled	7	2		75	350		
10. Rice flakes (Chowla)	7	1	1	77	346	10	155

Name of the food stuff	Protein gm.	Fat gm.	Fibre gm.	C H O gm.	Calories	Na mg.	Potassium mg.
11. Rice puffed (Murmura)	8	tr.	tr.	74	320	1406	180
12. Suji (Sooji)	10	1	tr.	75	350	20	85
13. Vermicelli (Siwain)	9	tr.	tr.	78	350	10	140
14. Wheat, whole (Gehun)	12	2	1	71	345	15	280
15. Wheat flour (whole), (Atta)	12	2	2	69	340	20	315
16. Wheat flour (Refined), (Maida)	11	1	tr.	74	350	10	130

Cholesterol content--nil.

TABLE II

PULSES & LEGUMES

Name of the food stuff	Protein gm.	Fat gm.	Fibre gm	C H O gm.	Calories	Na mg.	Potassium mg.
1. Bengalgram, whole (Channa)	17	5	4	61	360	35	808
2. Bengalgram, dhal (Chana ki dal)	21	6	1	60	370	70	720
3. Blackgram dal (Urd dal)	24	1	1	60	345	40	800
4. Greengram, whole (Mung)	24	1	4	57	334	30	840
5. Greengram dal (Mung dal)	25	1	1	60	350	25	1150
6. Lentil (Masur dal)	25	1	1	59	340	40	630
7. Peas, dried (Sukhi mutter)	20	1	5	57	315	20	725
8. Redgram dal (Tur dal or Arhar dal)	22	2	2	58	335	30	1100
9. Soya bean	43	19	5	21	432	—	—

Cholesterol content—nil.

TABLE III

LEAFY VEGETABLES

Name of the food stuff	Protein gm.	Fat gm.	Fibre gm.	C H O gm.	Calories	Na mg.	Potassium mg.
1. Amaranth Tender (Chaulai Sag or Lalsag)	4	1	1	6	45	230	340
2. Cabbage (Band Gobee)	2	tr.	1	5	25	10	110
3. Celery leaves (Ajwan ka patta)	6	1	1	2	35	35	210
4. Chawli	3	1	1	4	35	40	236
5. Colocasia (Green variety) (Alu ka pan, Arvi ka Sag)	4	2	3	7	55	3	180
6. Coriander leaves (Hara dhania)	3	1	1	6	44	60	256
7. Fenugreek leaves (Methi ka Sag)	4	1	1	6	50	75	30
8. Lettuce (Salad patta)	2	tr.	1	3	20	60	30
9. Mint (Paudina)	5	1	2	6	50	40	540
10. Parsley	6	1	2	14	85	30	880
11. Spinach (Palak)	2	1	1	3	25	60	205

Cholesterol content—nil.

TABLE IV

ROOT VEGETABLES

Name of the food stuff	Protein gm.	Fat gm.	Fibre gm.	C H O gm.	Calories	Na mg.	Potassium mg.
1. Beet root (Chukandar)	2	tr.	1	10	45	60	40
2. Carrot (Gajar)	1	tr.	1	10	50	35	108
3. Onion-Small (Pyaz)	2	tr.	1	10	60	tr.	125
4. Potato (Alu or Battata)	2	tr.	tr.	20	95	10	247
5. Radish white (Muli)	1	tr.	1	tr.	15	30	140
6. Sweet Potato (Shakarkand)	1	tr.	1	30	120	10	390
7. Turnip (Shalgam)	1	tr.	1	5	30	40	230
8. Yam (ordinary) (Ratalu)	1	tr.	1	25	110	10	235

Cholesterol content—*nil*.

TABLE V

VEGETABLES

Name of the food stuff	Protein gm.	Fat gm.	Fibre gm.	C H O gm.	Calories	Na mg.	Potassium mg.
1. Bittergourd (Karela)	2	tr.	1	4	25	15	150
2. Brinjal (Baingan)	1	tr.	1	4	24	3	200
3. Broad Beans (Bakla)	5	tr.	2	7	50	40	40
4. Calabash cucumber (Lawki, Ghia Kadu)	tr.	tr.	1	3	10	2	85
5. Cauliflower (Phool Ghobi)	3	tr.	1	4	30	50	140
6. Celery Stalks	1	tr.	1	4	20	—	—
7. Cluster beans (Guar ki phalli)	3	tr.	3	11	60	50	80
8. Cucumber (Khira)	tr.	tr.	tr.	3	10	10	50
9. Double beans (Chastang)	8	tr.	4	12	85		
10. Drumstick (Saijan ki Phali)	3	tr.	5	4	25		
11. French beans (Bakla)	2	tr.	2	5	25	4	120
12. Giant Chillies (Paprika Sagiya Mirchi)	1	tr.	1	4	25		
13. Green Pappaya	1	tr.	1	6	30	20	215
14. Knol-khol (khol rabi)	1	tr.	2	4	20	110	35

Name of the food stuff	Protein gm.	Fat gm.	Fibre gm.	C H O gm.	Calories	Na mg.	Potassium mg.
15. Ladies fingers (Bhindi)	2	tr.	1	6	35	5	100
16. Leeks (Vilayaiti Lasson)	2	tr.	1	17	75	9	
17. Mango green (Aam-Keri)	1	tr.	1	10	44	40	80
18. Parwar (Parwal)	2	tr.	3	2	20	3	80
19. Peas (English) (Mutter)	7	tr.	4	16	90	10	80
20. Plantain Green (Kela Hara)	1	tr.	1	14	64	15	190
21. Pumpkin (Kaddu)	1	tr.	1	5	25	5	140
22. Ridgegourd (Torai)	1	tr.	1	3	15	3	50
23. Snake-gourd (Pandola, Chahcinda)	1	tr.	1	3	20	25	30
24. Tinda (Tender)	1	tr.	1	3	20	35	20

Cholesterol content—nil.

TABLE VI

NUTS AND SEEDS

Name of the food stuff	Protein gm.	Fat gm	Fibre gm.	C H O gm.	Calories	Na mg.	Potassium mg.
1. Almond (Badham)	21	59	2	11	655	5	856
2. Cashewnut (Kaju)	21	47	1	22	595	10	560
3. Coconut, dry (Nariyal)	7	62	7	18	660	20	770
4. Gingelly Seeds (Til)	18	43	3	25	560	10	325
5. Groundnut (Moong Phali)	27	40	3	20	550	2	740
6. Groundnut roasted	32	40	3	19	560	2	740
7. Mustard Seeds (Rai)	22	40	2	24	540	3	840
8. Pistachio nut (Pista)	20	54	2	16	625	2	424
9. Walnut (Akhrot)	16	65	3	11	685	2	568

TABLE VII
CONDIMENTS, SPICES, etc.

Name of the food stuff	Protein gm.	Fat gm.	Fibre gm.	C H O gm.	Calories	Na mg.	Potassium mg.
1. Asafoetida (Hing)	4	1	4	68	300	5	90
2. Cardamom (Elaychi)	10	2	20	42	230	150	10
3. Chillies, green (Mirch)	3	1	7	3	30	5	217
4. Chillies, dry	16	6	30	32	250	10	530
5. Cloves, dry (Laung)	5	9	10	46	285	210	1000
6. Coriander (Dhania)	14	16	33	22	290	30	990
7. Cumin Seeds (Zira)	19	15	12	37	355	125	980
8. Fenugreek Seeds (Methi)	26	6	7	44	330	20	530
9. Garlic dry (Lahsan)	6	tr.	1	30	145	5	510
10. Ginger, fresh (Adrak)	2	1	2	13	65	25	110
11. Nutmeg (Jaiphal)	8	36	12	29	470	10	410
12. Pepper, dry (Kalimirch)	12	7	15	49	304	15	880
13. Tamarind pulp (Imli)	3	tr.	6	67	280	10	725
14. Turmeric (Haldi)	6	5	3	69	350	25	3300

Cholesterol content—nil.

TABLE VIII
FRUITS

Name of the food stuff	Protein gm.	Fat gm.	Fibre gm.	C H O gm.	Calories	Na mg.	Potassium mg.
1. Apple (Seb)	tr.	tr.	1	13	55	30	80
2. Banana, ordinary (Kela)	1	tr.		25	104	35	90
3. Banana, green variety	1	1		24	110	1	370
4. Banana, yellow, small variety	1	1		28	120		
5. Cherries, red	1	1	tr.	15	64	2	320
6. Coconut water						10	296
7. Coconut tender	1	1		6	40	10	773
8. Dates (Khajur)	1	tr.	4	34	144	1	160
9. Figs (Anjir)	1	tr.	2	8	35	2	190
10. Grapes (Pala green variety)	1	tr.	3	17	70	3	80
11. Guava, country (Amrud)	1	tr.	5	11	50	5	90
12. Jack fruit (Katahal or Phanas).	2	tr.	1	20	90	40	190
13. Jambu Fruit (Jamun)	1	tr.	1	14	60	25	55

Name of the food stuff	Protein gm.	Fat gm.	Fibre gm.	C H O gm.	Calories	Na mg	Potassium mg.
14. Lemon, sour (Neembu)	1	1	2	8	40	5	270
15. Lichis	1	tr.	1	14	60	125	160
16. Lime, sweet (Musammi)	1	tr.	1	9	40	5	200
17. Mango, Alphonso	tr.	1	tr.	16	75		
18. Melon, Water (Tarbuj)	tr.	tr.	tr.	3	15	25	160
19. Melon white	1	tr.	1	5	25	105	340
20. Orange, Nagpur Santra (Narangi)	1	tr.	tr.	9	40	4	150
21. Papaya, ripe (Papita)	1	tr.	1	7	30	5	150
22. Peaches (Aadoo)	1	tr.	1	12	50	2	450
23. Pineapple (Annanas)	tr.	tr.	1	11	45	35	40
24. Plums, red Punjab (Alubukhara)	1	tr.	tr.	12	50	1	190
25. Pomegranate (Anar)	2	tr.	5	15	65	1	130
26. Pummelo (Papnus, Chakotra)	1	tr.	1	10	45		
27. Raisins, cheap variety (Kishmish)	2	1	1	72	300	25	725

Name of the food stuff	Protein gm.	Fat gm.	Fibre gm.	C H O gm.	Calories	Na mg.	Potassium mg.
28. Sakkarteti	tr.	tr.		5	20		
29. Sapota-Bombay-Chiku (Chiku)	1	1		25	120		
30. Sithaphal (Hyderabad)	2	tr.	2	25	115		
31. Strawberry	1	tr.	1	10	44	1	180
32. Sugar-cane	tr.	tr.	3	20	80		
33. Sugar-cane juice	tr.	tr.	tr.	20	80		
34. Tomato, ripe	1	tr.	1	4	20	10	145

Cholesterol content—nil.

TABLE IX

FISH

Name of the food stuff	Protein gm.	Fat gm.	Fibre gm.	C H O gm	Calories	Na mg.	Potassium mg.
1. Bhetki (Khajura)	14	1		2	70	65	173
2. Black Pomfret (Halwa)	20	3		2	110		
3. Cod	18	tr.	0		75	65	360
4. Gurjawli (Rawas)	16	1		1	75		
5. Lobster	21	1		0	90	210	180
6. Oil Sardine	21	24		1	310	510	560
7. Oysters	6	1		4	40	73	110
8. Pomfrets	17	1		2	85	75	385
9. Prawn (Muscle) (Jhinga)	21	tr.		0	85	65	260
10. Rohu (Tambada Massa)	17	1		4	95	100	290
11. Salmon, pink canned	17	5	0	0	120	65	410
12. Shrimp	17	tr.		3	85	140	220
13 Sole (Sohr)	16	2		2	94		
14. Trout	18	1	0	0	80	50	
15. Tuna fish	24	21		0	290		

TABLE X

MEAT AND OFFAL

Name of the food stuff	Protein gm.	Fat gm.	Fibre gm.	C H O gm.	Calories	Na mg.	Potassium mg.
1. Bacon fried	25	55	0	1	605	2400	390
2. Beef	28	3	0	0	115	50	215
3. Chicken (Murgi ka gosht)	18	10	0	0	170	100	300
4. Duck	16	29	0	0	326	80	300
5. Egg, hen (Murgi ka anda)	13	13			170	85	115
6. Ham, cooked	24	33	0	0	400	1500	440
7. Kidney	21	4		0	115		
8. Liver (Kaleji)	10	8		1	150	70	150
9. Mutton	19	13	0	0	190	30	270
10. Pork (Suar ka gosht)	19	4	0	0	110		

TABLE XI

MILK & DAIRY PRODUCTS

Name of the food stuff	Protein gm.	Fat gm.	Fibre gm.	C H O gm.	Calories	Na mg.	Potassium mg.
1 Milk, cow's	3	4		4	65	50	140
2. Milk, buffalo's	4	9		5	115	20	90
3. Milk, goat's	3	5		5	70	35	180
4 Curds	3			3	60	25	130
5. Butter milk	1	1		1	15	130	140
6. Skimmed milk, liquid	3	tr.		5	30	50	150
7. Cheese	24	25		6	350	290	70
8 Skimmed milk powder (cow's milk)	38	tr.		51	360	525	1500
9. Whole milk powder (cow's milk)	26	27		38	495	410*	1100

TABLE XII

MISCELLANEOUS FOODSTUFFS

Name of the food stuff	Protein gm.	Fat gm.	Fibre gm.	C H O gm.	Calories	Na mg.	Potassium mg.
1. Bread, white	8	1	tr.	50	245	600	180
2. Bread, brown	8	1	1	50	244	600	230
3. Cane sugar (Commercial) (chini)	tr.			100	400		
4. Cocoa powder	20	25		30	430		
5. Codliver oil		100			900		
6. Coffee		5		5	40	2	1600
7. Honey (Shahad)	tr.			80	320	5	10
8. Jaggery (Guc)	tr.	tr.		95	380		
9. Neera	tr.			10	45		
10. Papads	19	tr.		50	300	High	
11. Sago (Sago)	tr.	tr.		85	350	3	3
12. Tea leaves	8	4	6	70	308	4	4800

Table xiii

PURINE CONTENT OF FOOD

When you have Gout or high uric acid watch for purine content of your diet.

Not allowed-High 150-800 mg./100gm.	Medium. One serving/day 50-150 mg./100gm.	Unlimited-low 0-15 mg./100 gm.
Sweet breads	Meat	Vegetables (all except as noted)
Sardines	Fish	Fruit
Liver	Seafoods	Milk
Kidneys	Peas	Cheese
Meat extract	Beans	Eggs
	Lentils	Cereals (except whole wheat)
	Asparagus	
	Cauliflower	
	Spinach	
	Mushroom	

Table XIV

DISTILLED ALCOHOLIC BEVERAGES

1) Distilled spirits, liquors or spirits		1 G. of Alcohol (about 1.16 ml.) = 7.1 cals.			
		Usual portion in ml.	Approximate alcohol by volume	Approximate calorie value of usual portion	Approximate calorie value of 100 ml.
Brandy	Indian	20	43	61	306
	Foreign	20	52	73	365
Gin	Indian	50	43	164	327
		43	43	141	327
	Foreign	50	80	295	590
		43	80	254	590
Rum	Indian	50	43	154	307
		43	43	132	307
	Foreign	50	Varies		
Vodka	Indian	30	40	85	284
	Foreign	30	48	102	341
Whisky	Indian	50	43	153	305
	Foreign	50	50	178	355

2) Liqueurs, or Cordials, coloured, flavoured and sugared (not less than 2.5% sugar)

	Usual portion in ml.	Approximate alcohol by volume	Approximate calorie value of usual portion	Approximate calorie value of 100 ml.
Anisette	20	27	42	208
Apricot	20	30	67	333
Blackberry	20	30	67	335
Cherry	20	31	68	342
Creme de Cacao	20	26	61	307
Curacao	20	36	76	378
Kummel	20	43	85	425
Maraschino	20	31	68	342
Peach	20	38	78	392
Prunelle	20	40	81	406
Sloe gin	20	30	57	335
Triple sec	20	39	80	399
The proprietary brands are				
Benedictine	20	43	89	445
Chartreuse, green	20	55	106	531
yellow	20	43	89	445

Liquors or Cordials contd.,

	Usual portion in ml.	Approximate alcohol by volume	Approximate calorie value of usual portion	Approximate calorie value of 100 ml.
Cherry Heering	20	25	58	290
Cointreau	20	40	81	406
Drambuie	20	40	81	406
Grand Marnier	20	40	81	406
Irish Mist	20	40	81	406
Tia Maria (coffee)	20	32	70	349

Table XV

WINES

1) Still or natural wines	Usual portion in ml.	Approximate alcohol by volume	Approximate calorie value of usual portion	Approximate calorie value of 100 ml.
Red	120	11	108	90
Rose	120	11	108	90
White	120	10	100	83
2) Fortified and Aromatic Wines				
Port	30	19	55	183
Sherry, dry	30	18	43	144
Sherry, sweet	30	18	45	150
Vermouth	105	19	169	161
3) Sparkling Wines				
Champagne	135	12	124	92

FERMENTED MALT BEVERAGES

Beer or ale, lager	Usual portion in ml.	Approximate alcohol by volume	Approximate calorie value of usual portion	Approximate calorie value of 100 ml.
Beer, brown	250	3	100	40
Beer, strong	250	7	195	78
Toddy	250	4 (1 to 7) (Calories vary, depending on alcohol content and natural sugars. Vitamins B_1, B, and C are also present in toddy)	143	67

Sweet bottled drinks, e.g. Cola (various types). Orange, Pineapple, etc. contain 75-80 calories/bottle (200-250 ml.). Mangola contains 140 calories/bottle.

Table xvi

Desirable Weights For Indian Men

(Aged 40 And Over)

HEIGHT		WEIGHT * Medium Frame	
Centimeters	Inches	Kilos	Pounds
150	59.1	51	112.4
152	59.8	52	114.0
154	60.6	54	119.0
156	61.4	55	121.3
158	62.2	56	123.5
160	63.0	57	125.7
162	63.8	59	130.1
164	64.6	60	132.3
166	65.4	62	136.7
168	66.1	63	138.9
170	66.9	65	143.3
172	67.7	67	147.7

Centimeters	Inches	Kilos	Pounds
174	68.5	68	149.9
176	69.3	70	154.3
178	70.1	72	158.7
180	70.9	74	163.1
182	71.7	76	167.6
184	72.4	77	169.8
186	73.2	78	172.0
188	74.0	80	176.4
190	74.8	81	178.6

*Weight as ordinarily dressed. For small frame deduct 10% and large frame add 10%.

For women deduct 2 cm. from the the actual height and then read off the weight from the above chart. Under the age of 40, deduct approximately 3% for every 5 years.

HOW TO KEEP YOUR HEART YOUNG AND HEALTHY

Get wise on the world's deadliest killer.

Here is a book which might well save you. Written by two eminent heart specialists, it separates the facts from the falacies, giving detailed information on the prevention, control, and cure of heart diseases. An outstanding feature is the highly successful health programme which makes it possible for a heart patient to lead a full and normal life.